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University**

Kalaburagi-585 103
Karnataka - India
Estd. : 2017



**ಶರಣಬಸವ
ವಿದ್ಯಾವರ್ಧಕಯ**

ಕಲಬುರಗಿ-೫೮೫ ೧೦೩
ಕರ್ನಾಟಕ - ಭಾರತ
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Email : sharnbasvauniversity@gmail.com

DEPARTMENT OF P. G. STUDIES IN BOTANY

SUK/BOT/2019-20/೨೪

Date: ೨೧.೧೨.೧೯

To,
The Registrar (Evaluation)
Sharnbasva University
Kalaburagi.

Sub: Constitution of **BOE-M.Sc. Botany** programme for the academic year 2019-20.

Sir,

With reference to the subject cited above, I am herewith submitting the detail of BOE members (Board of Examiners) of M.Sc. Botany programme of Sharnbasva University for the academic year 2019-20 constituted during the BOS meeting held on 08th August 2018. Kindly acknowledge the same.

Sl. No.	Name	Institution/ College University	C/M
1.	Dr. Arjun Shetty	Faculty of Science and Technology, Sharnbasva University, Kalaburagi	Chairperson
2.	Mrs. Jyothi C.	Faculty of Science and Technology, Sharnbasva University, Kalaburagi	Member
3.	Dr. Sandhya Hugar	Faculty of Science and Technology, Sharnbasva University, Kalaburagi	Member
4.	Dr. Dwarka Jadav	Faculty of Science and Technology, Sharnbasva University, Kalaburagi	Member
5.	Dr. Pratima Mathad	Dept. of Botany, Gulbarga University, Kalaburagi	Member
6.	Dr. G.M. Vidyasagar	Dept. of Botany, Gulbarga University, Kalaburagi	Member
7.	Dr. Sidanand K	Dept. of Botany, Basavaprabhu Kore Arts, Science and Commerce College Chikkodi.	Member
8.	Dr. Shivkumar Singh	Dept. of Botany, Palamaru University, Maheboobnagar	Member
9.	Dr. Rajkumar G.	Dept. of Botany, University of Mysore, Mysuru	Member
10.	Dr. Kotresha K.	Dept. of Botany, Karnataka University, Dharwad	Member

This is for your kind perusal.

Thanking you,

Yours sincerely

Arjun Shetty
Chairperson

BOS-M.Sc. Botany

Department of P.G. Studies in Botany
Faculty of Science & Technology
Sharnbasva University, Kalaburagi.

Copy to,

1. Hon'ble Vice-Chancellor, Sharnbasva University, Kalaburagi
2. Registrar, Sharnbasva University, Kalaburagi
3. Dean, Sharnbasva University, Kalaburagi.
4. All the above mentioned members.



॥ Dayan - Seva - Tyag ॥

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Date : 19/12/2019

APPRECIATION LETTER

To,

Dr. Sidanand Kambhar,

P. G. Department of Botany,

Basavprabhu Kore Arts, Science and Commerce College,

Chikodi, Belgavi, Karnataka.

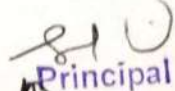
Dear Sir,

We are very much thankful to you for accepting our invitation as a resource person and deliberating a lecture on occasion of One Day Workshop on "Horticulture- An Agribusiness" on 20th December, 2019 organised by Department of Botany, Shri Yashwantrao Patil Science College, Solankur. We are also grateful for your kind support, co-operation and contribution during the workshop.

All the participants are highly enlighten and inspired by your fruitful deliberation.

We expect your kind co-operation in future also.

Thanking you,


Principal
Shri. Yashwantrao Patil
Science College, Solankur

Sharnbasveshwar
College of Science,
Gulbarga 585103 (Karnataka)

ESTD. 1956



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Phone: 08472-221941, Fax: 084 72- 241492, email: sbcscg@rediffmail.com

ATTENDENCE CERTIFICATE

This is to certify that **Dr.Sidanand V Kambhar**, Assistant Professor, Department of Botany, B.K.College, KLE Society, Chikodi has delivered a special lecture on “**Plant Taxonomy** ” on 17.01.2020 at our college.


PRINCIPAL



sidanand kambhar <sidanand.kambhar@gmail.com>

[JoTT] #6394 -- Article Review Acknowledgement

Dr. Sanjay Molur <sanjay@threatenedtaxa.org>
To: Kambhar Sidanand Vitthal <sidanand.kambhar@gmail.com>

Sun, Sep 6, 2020 at 10:50 PM

Kambhar Sidanand Vitthal:

The Editors of the Journal of Threatened Taxa wish to thank you for completing the online review of the manuscript "LEGUME DATABASE OF BAGALKOT DISTRICT, KARNATAKA, INDIA: Legume database of Bagalkot," . We are extremely grateful for your time and energy in reviewing this submission. Your input has contributed immensely to the improvement of the quality of work JoTT publishes. We hope you will agree to review manuscripts in the future.

In order to get recognized for the hard work, time, energy and expertise, you can build your academic credits for the reviews you do for JoTT. Please visit the Publons website and register yourself as a reviewer/editor and by simply forwarding this email to <reviews@publons.com> the free site will help you track and showcase your work.

Thanking you again and on behalf of the editors of JoTT,

Dr. Sanjay Molur
Founder & Chief Editor, JoTT
Executive Director, ZOO/WILD

Founder & Chief Editor, JoTT



sidanand kambhar <sidanand.kambhar@gmail.com>

Re: Ms_APRJ_57214 : We hereby acknowledge the receipt of your review comments

Editor SCIENCEDOMAIN31 <editor.sciencedomain31@gmail.com>
To: sidanand kambhar <sidanand.kambhar@gmail.com>

Thu, May 14, 2020 at 11:39 AM

Dear Dr. Kambhar Sidanand Vitthal,

Thank you so much for submitting your valuable review comments. We thankfully acknowledge your great contribution for maintaining high peer review standard of this journal.

Journal Name:	Asian Plant Research Journal
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Title of the Manuscript:	Allelopathic Potentials of Leaf, Shoot and Root Extracts of <i>Parthenium hysterophorus</i> L. and <i>Xanthium strumarium</i> L. on Agronomic Characters of <i>Brassica rapa</i> L.

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On Wed, 13 May 2020 at 13:17, sidanand kambhar <sidanand.kambhar@gmail.com> wrote:

Dear editorial team

Herewith i am sending reviewed manuscript for your reference. kindly proceed with minor changes in the manuscript.

Thank you

=====
Dr. Kambhar Sidanand Vitthal M.Sc., Ph.D. K-SET,
Post Graduate Department of Botany,
KLE Society's, Basavaprabhu Kore Art's, Science and Commerce College,
Chikodi, Belagavi- 591201, Karnataka

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Note on extended distribution of *Vigna indica* Dixit et al (Fabaceae) in Karnataka, India

Sidanand V. Kambhar*, Rahul R. Patil and Manjunath L. Hanji

Post Graduate Department of Botany, KLE Society's,

Basavaprabhu Kore Art's, Science and Commerce College, Chikodi, Belagavi- 591 201,

Corresponding author e-mail : sidanand.kambhar@gmail.com

The species of *Vigna indica* Dixit et al, was recorded from Vijayapur and Chikodi tahshil of Belagavi District, Karnataka. The present collection of this species found new distribution record for Karnataka state. The short description and distribution also been provided.

Keywords: *Vigna*, Fabaceae, Chikodi, Belagavi

INTRODUCTION

The Leguminosae, commonly called the bean or pea family, is currently divided into three subfamilies (Caesalpinioideae, Mimosoideae and Papilionoideae), further subdivided into 35 tribes which together comprise 751 genera containing a total of ca. 19,500 species. The Leguminosae is second only to the grass family in economic value, but has significantly greater habit, flower and fruit diversity. The legumes represent one of the most phenomenal examples of manipulation and utilization of a plant family by human cultures worldwide. It has involved the domestication of a set of globally important food crops, such as soybean, culinary beans, groundnut, lentil, grain legumes (*Vigna*), chickpea and pea (LPWG 2013).

The genus *Vigna* consists of approximately 104 species which are distributed throughout the world. Initially the genus *Vigna* was divided into seven subgenera, *Ceratotropis* (Piper) Verdc., *Haydonia* (Wilczek) Verdc., *Lasiosporon* (Benth.) Verdc., *Plectotropis* (Schum.) Baker, and *Vigna Savi* Marechalet *et al.* (1978). The subgenus *Ceratotropis* has centre of species diversity in Asia Lewis *et al.* (2005). India is represented with 24 species of genus *Vigna* (Sanjappa, 1992). In Flora of Karnataka (Vol 1.), 10 species of *Vigna* has been reported by C. Saldanha & B. Gurudev Singh (1984), they are *Vigna aconitifolia* (Jacq.) Marechal, *V. angularis* (Willd.) Ohwi & Ohashi, *V. dalzelliana* (Kuntz.) Verdc, *V.*

Pilosa (Willd.) Baker, *V. trilobata* (L.) Verdc, *V. radiata* (L.) Wilezekvar *sublobata*, *V. umbellata* (Thunb.) Ohwi & Ohashi, *V. vexillata* (L.) A. Rich., *V. radiata* (L.) Wilezek var *radiata* (Hesaru) and *V. unguiculata* (L.) Walp (Halasande). Therefore, the present record found to be a new distributional record for the Karnataka state.

MATERIALS AND METHODS

During regular floristic exploration surveys in 2017–18, a species of *Vigna Savi* was observed with good population near Toravi, Tikota, Bhutnal Lake, Begum Lake of Vijayapur District and also in open hills of Chikodi of Belagavi District of Karnataka. After critical examination and reference to relevant taxonomic literature, it was identified as *Vigna indica* Dixit et al., (2011). The collected specimens were processed and deposited in the Herbarium, Post Graduate Department of Botany, KLE Society's, Basavaprabhu Kore Art's, Science and Commerce College, Chikodi, Belagavi, Karnataka

Short description

Vigna indica Dixit *et al.*, in Rheedeae, 21:1-7. 2011. *Vigna trilobata* (L.) Verdc. var. *pusilla* Naik & Pokle in J. Econ. Tax. Bot. 7:670 (1985) 1986; Sanj. Legumes of India 276. 1991; Naik, Fl. Marathwada 1 : 5. 1998.

Herbs, trailing or twining, 15–100 cm. high. Leaves pinnately 3–foliolate or deeply 3–lobed, lobes

1.5–3.0 x 1.2– 2.5 cm, ovate, subacute or retuse at apex. Flowers yellow, 5–10 in dense, terminal clusters. Pods 1.5–2.0 cm long, hairy. Seeds 5–10, brown, granulate, truncate at both ends.

Fls. & Frts.: August–September

Distrib.: In semiarid zone of Rajasthan, Gujarat, Madhya Pradesh and Maharashtra, Karnataka.

DISCUSSION

In 1986, Naik & Pokle published a new variety for *Vigna trilobata* from Marathawada. The *V. trilobata* (L.) Verdc.var. *pusilla* was recognized on the basis of leaflet length variation and their lobes pattern. recently, *V. trilobata* (L.) Verdc.var. *pusilla* has been raised to the rank of species by Dixit et al. (2011). *Vigna indica* can easily be distinguished from all other species of section Aconitifoliae by its cylindrical to sub-tetragonous seeds with truncate ends.

Among the species of section Aconitifoliae reported from India, *V. indica* is more closely related to *V. aconitifolia* from which it differs in having narrowly to broadly spathulate lobes of leaflets and ovate hilum. This species has so far not been reported or recorded any districts of Karnataka. Therefore it appears to be a new record for the state.

However, the India is one of the major country who domesticated several pulses. Evaluation of nutritional and anti-nutritional compositions of the seed of *Vigna indica* remains unexplored. Therefore, the further study is to investigate the relationships between

regional cultivated and wild species of *Vigna* with respect their nutritional value and anti-nutritional value from the raw/unprocessed seeds.

Assessment of cultivated *Vigna* species and relationships among wild *Vigna* species which may be helpful in the breeding programmes through suitable methods, in particularly interspecific hybridization.

Acknowledgements

Authors are grateful to the Co-ordinator and the Principal, Basavaprabhu Kore Art's, Science and Commerce College, Chikodi, Belagavi for providing laboratory facilities and their moral support.

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Accepted:

(III)

Senna italica Mill. subsp. *italica* (Fabaceae; Caesalpinioideae): An Overlooked species from Karnataka State, India

The *Senna* is one of the most diverse genera within the family Fabaceae (under subfamily Caesalpinioideae) with approximately 350 species of trees, shrubs and sub-shrubs distributed throughout the American, African, and Australian continents, with occurrences also in Asia and on Pacific islands (Marazzi *et al.*, 2006). The genus extends in all terrestrial habitats from the equator to the edges of dry and cold deserts, but much of its diversity is centered in areas of varied topography with seasonal climates (Irwin and Barneby, 1982).

The subspecies of *Senna italica* was recorded from vast geographical range from North to South Africa and through the Middle East to India. Based on the remarkable range of variation within the species, especially in leaflets size, inflorescence length and flower size, it had been split into three sub species, namely *S. italica* sub sp. *italica*, *S. italica* sub sp. *arachoides* and *S. italica* sub sp. *micrantha*. The sub sp. *italica* and *micrantha* are widely distributed in North Africa, Egypt, Sudan and Ethiopia, and also occurs in the Middle East; Israel, Arabia, Persia and Baluchistan. The *S. italica* sub sp. *italica* reaches to North West India, particularly Sind and Punjab (Brenan, 1958). Further, it is mentioned that majority of Indian specimens belongs to sub sp. *micrantha* overlapping with subsp. *italica*. According to Brenan's view, almost 80% of Indian materials belong to *S. italica* sub sp. *italica* and only 20% belongs to *S. italica* subsp. *micrantha* and subsp. *arachoides* confined to Africa only.

In Karnataka, the distribution of both *S. italica* subsp. *italica* and *S. italica* sub sp. *micrantha* is almost overlapping. While scrutinizing the herbarium specimens deposited in Herbarium, Department of Botany, Karnatak Science College, Dharwad. It was observed that many of collections from Gadag, Kalaburagi and Bagalkot were identified as *Senna italica* Mill. and the same were determined as *Senna italica* sub sp. *micrantha* only which has prostrate habit dominantly. Previously, this *S. italica* sub sp. *Micrantha* was known to occur in Pune (Maharashtra), Kanyakumari (Tamil Nadu) and *S. italica* sub sp. *italica* known to occur from Delhi, Gujrat, Maharashtra and Rajasthan (Singh, 2001). Even, it was cross verified with digital herbarium available at JCB online herbarium database, the image is appearing like *S.*

italica sub sp. *Micrantha* only.

Therefore, it seems the present collection forms a new record for the states of Karnataka indicating the clear overlapping of two sub species of *Senna italica* in Karnataka. A detailed description along with comparison between two subspecies given in Table 1 and photographs of a recent collection is provided here for easy identification of the taxa.

Senna italica Mill., Gard. Dict. ed. 8. No. 2. 1768; Brenan, in Kew Bull., 13 (2): 239. 1958; Irwin & Barneby, in Mem. New York Bot. Gard. 35 (2): 482. 1982; Singh, Mono. Ind. Sub. Cassiinae 147. 2001. sub sp. *Italica* Fig.1.

Herbs, to 60-90 cm high, sparsely pubescent when young. Stem erect, branched, Leaves pinnately compound opposite, rachis deeply grooved, brownish, puberulous, 5 to 8 cm long; leaflets 5-7 pairs, 1-3 x 0.5-2 cm, obovate or elliptic, rounded at apex, oblique at base, secondary veins 7-15, opposite or subopposite, puberulous; petioles 5 to 7.5 cm long, reddish tinge at the base and also petiole base, glands absent, stipules triangular to narrowly triangular, 0.2-0.8 x 0.05-0.2 mm, acuminate at apex, puberulous. Flowers in axillary racemes, 6 to 20 cm long, pedicels 0.3-0.5 mm long, bracts boat shaped, 0.1-0.4 mm long, acute to sub-acuminate, caducous.

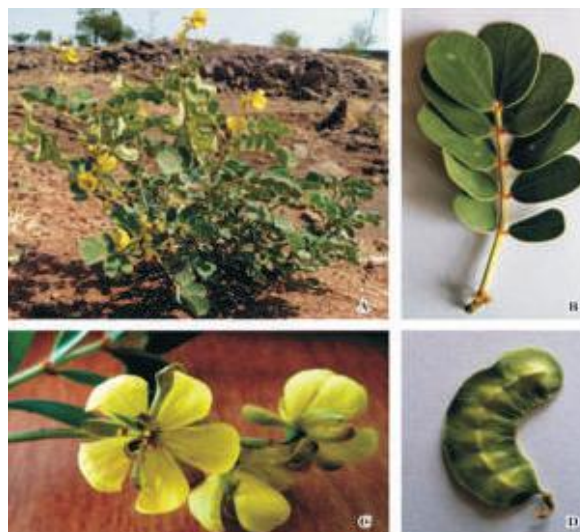


Fig. 1: *Senna italica* Mill, sub sp, *italica*; A. Habit; B. Leaf; C. Close view of Flower; D. Single Pod

Table 1: Comparison in morphological characters in two sub species of *Senna italica* Mill.

Character		<i>Senna italica</i> Mill. Sub sp. <i>italica</i>	<i>Senna italica</i> Mill. Sub sp. <i>micrantha</i> (Brenan) Lock
Habit		Erect	Prostrate
Stipules	Shape	Triangular to narrowly triangular	Lanceolate
	Size	2-8 x 0.5-2 mm	2-6 x 0.5-1 mm
Leaf rachis	Length (cm)	5-8	4-7
	Leaflet pairs number per leaf	4-7	3-6
Leaflets	Secondary veins	7-15, opposite or subopposite	5-12, opposite or subopposite
	Size (cm)	1-3 x 0.5-2	0.5-2 x 0.5-1.5
Stamens	Abaxial filament length (mm)	2.5-4.5	1.5-3
	Abaxial anther length (mm)	5-11	3.5-7
	Upper median filament length (mm)	2.5-4.5	2.5-3
	Upper median anther length (mm)	5-7.5	2.5-4.5
	Median filament length (mm)	2-3.5	2-2.5
	Median anther length (mm)	3-5.5	3-4.5
	Adaxial filament length (mm)	1.5-3.5	1.5-2.5
	Adaxial anther length (mm)	1-3	1-2
	Size (cm)	3-6 x 1-2	2-4.5 x 1-1.5
	Pod	Seeds per pod	1-12

Sepals 5, imbricate, free, 0.3-0.8 mm long, oblong, glabrous. Petals 5, imbricate, 0.8-1 cm long. Stamens 10, 7 fertile, abaxial stamens 2, filaments length to 0.4 mm, anthers length 0.5-1.1 cm, sagittate at base, upper median stamen; 1, filament length to 0.4 mm, anther length 0.5-0.75 mm, sagittate at base, median stamen; 4, filament length to 0.2-0.35 mm, anthers length 0.3-0.5 mm, sagittate at base, adaxial stamens 3, staminodes, filament length 0.1-0.35 mm, anthers length 0.1-0.3 mm, anthers twisted and wider than other 7, dehiscing by apical pores. Ovary stipitate, densely apprescent, white pubescent, 1-2 cm long; style circinnate, compressed, 0.7 mm long, C shaped; stigma trumpetate. Pod 2-6 x 1-2 cm, reniform, compressed, crested in centre of each valve, reddish or brown to dark brown, or pale olive, the immature dark brown in centre and light olive on the margin, or reddish in centre and brown on margins, semi-septate, beak long, circinnate, reticulately veined, persistent style, 8-10 seeded, mature pod turning to black brown when old; seeds 0.2-0.6 x 0.2-0.3 mm, compressed, obcordate, bullate surface, areole elliptic, emarginated at apex, tapering towards base, Grey, brown or orange.

Specimens examined: INDIA, Karnataka, Vijayapur. Toravi, 04.07.2015, SVK 1040; Near Bhutnal Lake, 30.11.2015, SVK 1122; Near Begum Lake, 22.12.2017, SVK 1150.

Flowering and Fruiting: July-August and December-January

Habitat : Especially in barren places, up to 650 m. Most commonly, the associated species are *Boerhavia diffusa* L., *Croton bonplandianus* Baill., *Senna auriculata* (L.) Roxb. and *Senna uniflora* (Mill.) Irwin & Barneby.

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SIDANAND V. KAMBHAR AND K. KOTRESHA¹
 Post Graduate Department of Botany, KLE Society's,
 Basavaprabhu Kore Art's, Science and Commerce College,
 Chikodi, Belagavi- 591 201, Karnataka
 E-mail: sidanand.kambhar@gmail.com

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¹Taxonomic and Floristic Laboratory, Department of Botany, Karnatak Science College, Karnatak University's College, Dharwad- 580 001, Karnataka

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**ITS GENE BASED MOLECULAR GENOTYPING OF *NEPETA SHEILAE*
HEDGE & R.A. KING (LAMIACEAE) ENDEMIC TO SAUDI ARABIA**

FAHAD M.A. ALZEIBR¹, M. AJMAL ALI^{*2}, M. OLIUR RAHMAN³,
FAHAD AL-HEMAID², JOONGKU LEE⁴ AND SIDANAND V. KAMBHAR⁵

*Department of Botany and Microbiology, College of Science, King Saud University,
Riyadh-11451, Saudi Arabia*

Key words: Nepeta sheilae Hedge & R.A. King; Lamiaceae; nrDNA; ITS; Endemic;
Saudi Arabia.

The genus *Nepeta* L. (family Lamiaceae), commonly known as ‘catmint’ or ‘catnip’, is represented by c. 300 species (Kaya and Dirmenci, 2008), distributed in Asia, Europe, North Africa and America (Jamzad *et al.*, 2000), morphologically characterized by herbaceous, perennial or annuals, sturdy stem and green to greyish-green cordate leaves (Jamzad *et al.*, 2003). In the flora of Saudi Arabia, the genus *Nepeta* is represented by two species i.e. *N. deflersiana* Schweinf. and *N. sheilae* Hedge & R.A. King. *N. sheilae* is endemic to Saudi Arabia, mainly distributed in northern Hizaz mountains (Chaudhary, 2000). The morphological characters of *N. sheilae* i.e. woody-based, lamina triangular ovate, inflorescence verticillaster, many-flowered, bracteoles narrowly linear-lanceolate, corolla exerted, curved, nutlets brown, apically verrucose or tuberculate etc. overlap with *N. deflersiana* (Chaudhary, 2000). The morphology of *N. sheilae* (Chaudhary, 2000) resembles with section *Oxynepeta*, and the section *Oxynepeta* is consistent in the generic classification of *Nepeta* proposed by Bentham (1848), Briquet (1896) and Budantsev (1993), which are characterized by herbaceous habit; bracts green, inconspicuous; inflorescence interrupted, verticillaster or lax, pedunculate cymes; middle lobe of the lower lip of corolla concave with dentate margin; pollen bi-reticulate, rarely perforate reticulate; and pollen primary muri well-defined, prominent, while secondary muri inconspicuous (Jamzad *et al.*, 2000). Though the phylogenetic relationships in the genus *Nepeta* and other related genera of Lamiaceae have previously been inferred using ITS sequences of nrDNA, the taxonomic status of *N. sheilae* is unresolved (Jamzad *et al.*, 2003). The nrDNA ITS sequence is well known plant DNA barcoding gene widely applied to represent evolutionary relationships at lower taxonomic ranks, notably at the intrageneric ones (Ali, 2019); hence, the present study aims to resolve the taxonomic status of *N. sheilae* using molecular genotyping of ITS sequence of nrDNA.

The leaves of *N. sheilae* for sequencing were collected from the herbarium specimen [Voucher information: Jabal Lakus Lauz area, South of Haql NW side, 20.5.1990, I.S. Collette 13417 (RIY)]. The total genomic DNA was isolated using Qiagen DNeasy Plant Mini Kit (Valencia, CA, USA). The nrDNA ITS sequence was amplified using ITS primer (White *et al.*, 1990), and sequenced using ABI PRISM 3100 DNA Analyzer (Perkin-Elmer, Applied Biosystems). In order to unravel the proximity of *N. sheilae* with the members of Nepetoideae, the

*Corresponding author. email: ajmalpdrc@gmail.com, majmalaliksi@gmail.com, alimohammad@ksu.edu.sa

¹Present Address: Department of Biology, Faculty of Sciences, University of Tabuk, Tabuk 71491, Saudi Arabia.

²Department of Botany and Microbiology, College of Science, King Saud University, Riyadh-11451, Saudi Arabia

³Department of Botany, University of Dhaka, Dhaka 1000, Bangladesh.

⁴Department of Environment and Forest Resources, Chungnam National University, Daehak-ro, Yuseong-gu, Daejeon, Republic of Korea.

⁵Post Graduate Department of Botany, KLE Society's, Basavaprabhu Kore College, Chikodi-591 201, Belagavi, Karnataka, India.

nrDNA ITS sequence of *N. sheilae* was analyzed together with the highly similar sequence revealed from the BLAST search i.e. *N. heliotropifolia*, morphologically similar to *N. deflersiana*, and the representative from six different genera belongs to the family Lamiaceae, subfamily Nepetoideae, and outgroup *Paulownia tomentosa* (Thunb.) Steud. (family Paulowniaceae) and *Pedicularis groenlandica* Retz. (family Orobanchaceae) following previous studies (Li *et al.*, 2016) retrieved from the GenBank.

The present study revealed that the length of nrDNA ITS region (ITS1, 5.8S and ITS2) in *N. sheilae* sequenced was found to be 640 nucleotides. The generated sequence of *N. sheilae* was submitted to GenBank (accession number MN907379). Among all the *Nepeta* taxa included in the study, *N. sheilae* showed the highest sequence similarity of 97.66% with *N. heliotropifolia* (Table 1) in the BLAST-searched (Altschul *et al.*, 1990).

Table 1. Results of BLAST search of nrDNA ITS sequence of *Nepeta sheilae*.

Sl. No.	Taxa	Max. Score	Total Score	Query cover (%)	Percent identity (%)	GenBank accession number
1	<i>Nepeta heliotropifolia</i> Lam.	1099	1099	100	97.66	AJ515312.1
2.	<i>Nepeta congesta</i> Fisch. & C.A. Mey.	1096	1096	100	97.51	AJ515161.1
3.	<i>Nepeta scrophularioides</i> Rech.f.	1077	1077	100	97.04	AJ515319.1
4.	<i>Nepeta cataria</i> L.	1077	1077	100	97.04	AJ515313.1
5.	<i>Nepeta kurdica</i> Hausskn. & Bornm.	1074	1074	100	96.88	AJ515320.1
6.	<i>Nepeta isaurica</i> Boiss. & Heldr. <i>ex</i> Benth.	1064	1064	100	96.72	AJ515306.1
7.	<i>Nepeta deflersiana</i> Schweinf.	1053	1053	100	96.41	KF765442.1

The phylogenetic analyses of the aligned dataset [CLUSTALX v.1.81 (Thompson *et al.*, 1997)] using Minimum Evolution method (Rzhetsky and Nei, 1992) in MEGA4 (Tamura *et al.*, 2007) were performed. The positions containing gaps and missing data were eliminated from the aligned dataset. There were a total number of 470 positions in the final dataset, out of which 93 were parsimony informative. Variation in the base pair between the sequence of *N. sheilae* and *N. deflersiana* is shown in Fig. 1. The molecular phylogenetic relationships of *N. sheilae* with its closely related *N. heliotropifolia* and *N. deflersiana*, and other members of the subfamily Nepetoideae are illustrated in Fig. 2.

The base pair differences between the sequence of *N. sheilae* and *N. deflersiana*, and the close proximity of *N. sheilae* with *N. heliotropifolia* (bootstrap 47%) in the phylogenetic tree revealed harmony with the BLAST search result; thus, we herein recognized *N. sheilae* as a distinct species and is different from morphologically similar *N. deflersiana*.

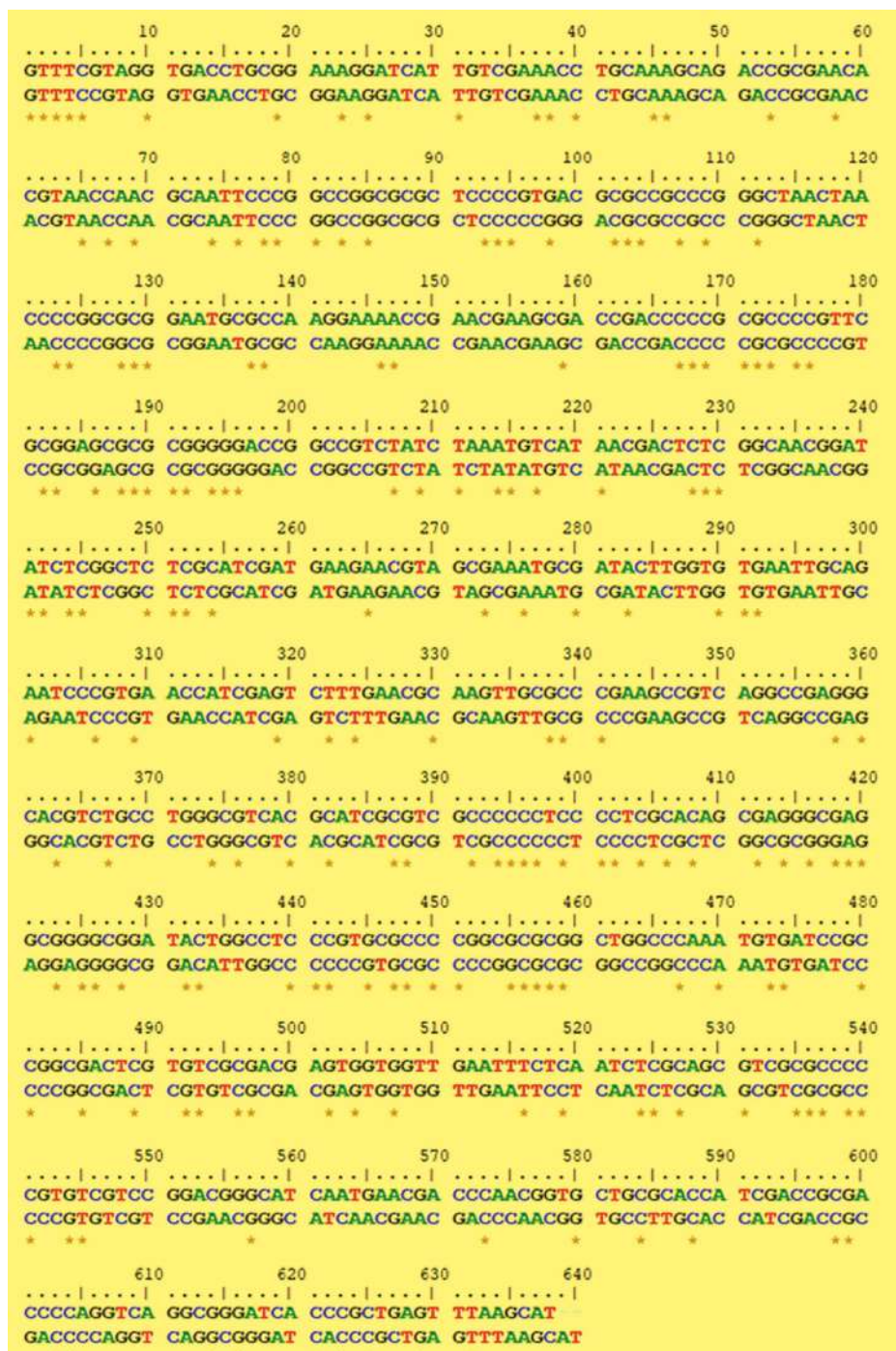


Fig. 1. The differences in the nucleotide base pairs in the alignment (sequence lane 1: *Nepeta deflersiana*; sequence lane 2: *N. sheilae*; lane 3: Clustal consensus).

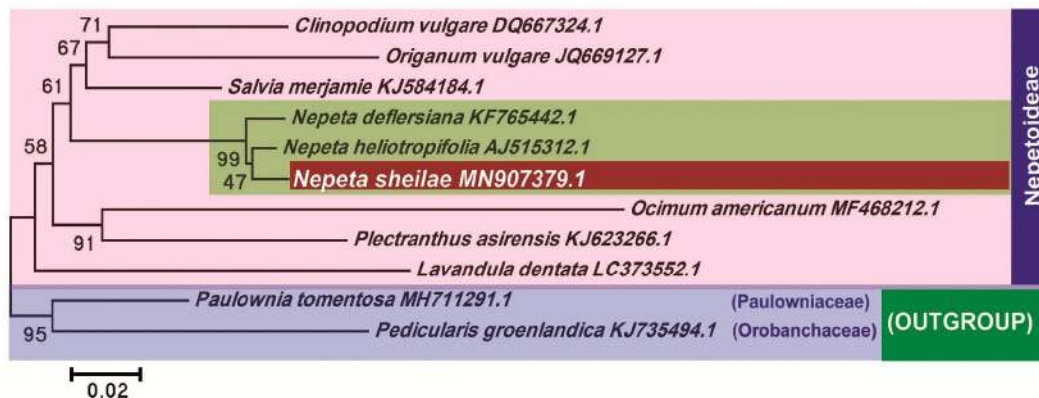


Fig. 2. The phylogenetic tree showing relationships of *Nepeta sheilae* with its closely related species based on nrDNA ITS sequence data inferred using minimum evolution method. The GenBank accession number shown next to taxon. The bootstrap support in 500 bootstrap replicates shown on the branch.

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KLE Society's
Jagadguru Tontadarya Arts , Science and Commerce College
Gadag-582101, Karnataka
(Re-accredited "A" by NAAC)
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Principal



Janata Shikshan Sangha's
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ARTS & COMMERCE COLLEGE, BANHATTI-587311

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**KLE Society's
Basavaprabhu Kore Arts, Science and Commerce
College, Chikodi- 591 201**

NATIONAL LEVEL ESSAY COMPETITION

**COVID-19:
Immunity and
Deaths**



CONTENT

	From the Principal Desk	i
1	Miss. Dhanashree R. Naik (First Prize)	1
2	Mr. Rajesh Gopal Mukkannavar (Second Prize)	5
3	Mr. Afaq Ahmad Dar (Third Prize)	10
4	Mr. Abhinandan Appasaheb Charate	14
5	Miss. Aisha Rafik Mamlekar	18
6	Miss. Aishwarya M. R.	21
7	Miss. Amruta M Khanai	24
8	Miss. Ankit P. Gondane	29
9	Miss. Apurva Prakash Patil	31
10	Miss. Bhavana C. Patil	36
11	Miss. Bindu Prakash Parmar	39
12	Mr. Chandan H Patgar	41
13	Miss. Christina Edwin	45
14	Miss. Ankitha	49
15	Miss. Deeba Rana	52
16	Miss. Deepanshi Rathore	54
17	Miss. Divyarani Chavgonda Patil	56
18	Mr. Dnyanadev Huddar	60
19	Mr. Sourabh D. Shinde	62
20	Miss. Bhavyashri R Patil	66
21	Miss. Geeta P Chinagi	70

22	Mr. Hritith Pandit	73
23	Mr. Jinendra Patil	75
24	Miss. Komal chandrakant Garad	79
25	Miss Laxmi Mantur	82
26	Miss. Manjula Bhave	86
27	Miss. Pratiksha Tanaji Patil	92
28	Miss. Priyanka Babasaheb Salunkhe	96
29	Miss. Sana Mahe Jabeen	101
30	Mr. Sachin Pattar	106
31	Miss. Seema Dattawade.	108
32	Miss. Shambhavi Salimath	112
33	Miss. Shivani Narayanrao Nimbalkar	116
34	Miss. Shrestha M. Hiremath	119
35	Miss. Shreya Sunil Ashtekar	123
36	Miss. Soujanya Ramesh Hegade	125
37	Mr. Umair Ahmed Mantri	129
38	Miss. Ummehani Salim Jakati	133
39	Miss. Vasuki Madhaves Ashrit	137
40	Miss. Vijaylaxmi Veerappa Danannavar	142

From the Principal Desk

The ongoing COVID-19 pandemic due to the SARS-CoV-2 virus has already infected more than 15 million people and accounted for death of more than half-a-million worldwide, with no sign of abating in near future. Given the scale of its spread, it is obvious that everyone has to contribute to contain the damage caused by the pandemic. The doctors and medical researchers have a very critical role to play by conducting innovative research and harnessing their ideas into successful products in a very short period so that the virus attack in a person can be identified at a nascent stage and contained without infecting general public, healthcare workers, the security personals, media people, and many others engaged in transport, manufacturing and entertainment industries. It is a difficult task to develop new technologies within a short span but many of the existing technologies can be deployed with subtle changes to meet the immediate needs challenged by COVID-19. Realizing the concern caused by COVID-19, Under Graduate (UG) Department of Botany, Post Graduate (PG) Department of Botany and Department of Mass Communication & Journalism has decided to bring a National Level Essay Competition for all the young minds. We feel fortunate that we have been entrusted to bring this competition in a record time of 2 weeks.

We were overwhelmed by the response received from various organizations, institutes and university across the country. Our reviewers have done rigorous assessment of submitted scripts and many of the scripts have undergone rejection due to their improper arrangement and they didn't follow the submission rules. We are received 61 entries of participants, but among them we are presenting 40 scripts in this booklet. The first three prizes have been arranged in the beginning of the booklet.

We extend our deep appreciation to all the contributors for their invaluable contributions in a short notice. We would like to take this opportunity to thank all contributors for their timely contribution despite their preoccupation. Not only they came forward spontaneously to our call, but they also have contributed their important views, showing the direction to cope up with the challenges and recovery. Collaborated through digital interfaces, this publication has been produced at zero cost while staying at home during the lockdown period.

Shri. Udaysingh R. Rajput
Principal

Name: Miss. Dhanashree R. Naik

FIRST PRIZE

College Address: Dr. A. V. Baliga College of Arts and Science, Kumta, Uttara
Kannada, Karnataka.

Contact No.: 9380496949.

Email id: naikdhanashree08@gmail.com

The world is battling the most severe global outbreak (Pandemic) of recent times due to the novel coronavirus namely the Severe Acute Respiratory Syndrome virus 2 (SARS-CoV-2). It began with reports on mysterious pneumonia cases in Wuhan District of Hubei province, China in December 2019 with the first ever death by coronavirus disease 2019 (COVID-19) on January 11, 2020. Though most countries initially ignored this novel infection, the Indian health authorities including the Indian council of Medical Research (ICMR) became active immediately reporting the first laboratory confirmed case at the National Institute of Virology (NIV), Pune on January 30. India reported its first death of COVID-19 on March 11, two months later than in China. In a short span of time, COVID-19 has become a rapidly spreading communicable disease forcing the World Health Organization (WHO) to declare it as the “Public Health Emergency of International Concern” on January 30. As on June 8, 2020, the WHO pandemic update indicates a whopping 7,102,957 confirmed reported cases globally from nearly 213 countries/areas or territories with 406,343 confirmed deaths.

The coronavirus SARS-CoV-2 is the strain that caused the current pandemic and is highly contagious. Once infected, a person has the potential to develop COVID-19, a respiratory syndrome that starts with mild cold and flu-like symptoms, moving on to the lungs as the illness progresses. The incubation period of COVID-19 is typically 14 days, although symptoms may appear as early as five days after infection. The disease spreads through human-to-human transmission on droplets infected with human fluid, both through touching and through the air; no vaccine is available yet.

Immune system

The killer is not the virus but the immune response. Infection with the SARS-CoV-2 virus is not synonymous with disease. The word ‘infection’ merely refers to

the acquisition of the virus, but 75% of people who are infected do not develop Covid-19. However, all people infected with the disease are able to spread it.

We have been educated on how to minimize our exposure to the SARS-CoV-2 virus by frequent hand washing, social isolation, not touching our faces, and wearing a mask over our noses and mouths. But why does this virus affect some people badly, some only mildly, and others are not even aware that they are infected? The answer lies in the health of our immune system.

Our immune system is an amazingly complex system that provides us various mechanisms to fight off disease. The immune system can be seen as the ‘army’ of the human body, and just like real soldiers, the different parts of the immune system function better on improved rations

SARS-CoV-2 infection can be roughly divided into three stages:

Stage I, an asymptomatic incubation period with or without detectable virus;

Stage II, non-severe symptomatic period with the presence of virus;

Stage III, severe respiratory symptomatic stage with high viral load.

Our immune systems have two sets of defences against viruses and other pathogens: a first-line army of cells, called leukocytes, that attack invading microbes within minutes to hours, and a second-line force of precisely targeted antibodies and T-cells that surge to the battle front as late as several days after.

With advancing age, the body has fewer T-cells, which produce virus-fighting chemicals. By puberty, the thymus is producing tenfold fewer T-cells than it did in childhood, Nikolich-Zugich said; by age 40 or 50, there is another tenfold drop. Another age-related change keeps T-cells away from battle. Even before T-cells enter the fray, other cells recognize invaders and dispatch natural killer cells and other soldiers to destroy as many as possible in the first few hours after infection. Then these same front-line cells literally show the virus to T-cells, saying in essence, this is the enemy; produce virus-killing compounds.

“But this communication does not work as well as we get older,” Nikolich-Zugich said. The instructor cells grow scarce and start to do the biological equivalent of mumbling. T-cells therefore respond too late and too little.

A declining immune system?

The ability of the human immune system to fight off pathogens declines over time and is significantly reduced in those over 70. Recent results show that in bad cases of COVID-19, there is a severe deficiency in certain classes of immune cells that fight off infections. These immune cells are known to be less active in the elderly, suggesting that an age-related decline in immune function may put the elderly at risk of more severe COVID-19 disease.

But if the age-dependency of COVID-19 disease was specifically due to immune function, we would expect babies to also show severe disease, as their immune systems are still developing. This is what is seen in most seasonal flu epidemics, where those under two and those over 65 are at a greater risk of severe disease. Indian population could have intrinsic immunity to resist COVID-19 challenge.

The persistent usage of BCG vaccination in India since the late 1940's could have provided a boost to develop robust innate and adaptive immunity against infectious agents. It may be noted that as of now, the WHO does not recommend BCG vaccination for prevention of COVID-19. Similarly, the beneficial role of chloroquine and hydroxychloroquine has been much talked about and debated, while there has already been an extensive usage of this drug at the community level in India — this too may ultimately prove beneficial.

The second and equally important factor is related to environment and food habits that may provide some degree of resistance to infection. Much literature exists in Ayurveda and other Indian systems of medicine on the definitive beneficial effects of Indian spices in augmenting immunity. For example, turmeric that contains curcumin (active compound polyphenol) is the most common food ingredient of the Indian kitchen. Curcumin is known to have antioxidant, anti-inflammatory, anti-bacterial and wound healing properties.

Immune system response to coronavirus attack.

A cascade of viral particles enters the body through the nose, eyes or mouth. Breathing carries some of these particles to the lower respiratory tract where the spike proteins of the coronavirus, acting like a key, lock into epithelial cells that line the respiratory tract as well as those in the air sacs in the lungs. SARS-CoV-2 is able to stay undetected longer than many flu or coronaviruses and its spike proteins are able

to gain entry by unlocking the ACE2 protein on the lung cells. Once in, they hijack the cell’s machinery, replicate and multiply and infect adjoining cells. Like the defining ACE2 proteins on the epithelial cells, viruses too have a tell-tale signature on their surface called antigens and spotting these is what kicks the immune system into action by producing antibodies.

Deaths

Mortality statistics globally suggest that men are twice more likely than women to succumb to a COVID-19 infection. This follows from studies that show women, on average, have a better-regulated immune response than men in pathogenic infections. Estrogen is said to be an immune-system modulator and the ability to deal with a pregnancy — which also begins as a foreign body growing within — primes women to better deal with infections, say experts.

The response of the immune system is in many ways a mystery. For instance, so far, there have been few deaths reported in children from COVID-19. Given that children’s immunity systems are still maturing and learning to adapt to a galaxy of infectious agents, why they seem to be relatively better protected from severe Covid-19 disease is not known.

The most comprehensive estimates to date of elderly people’s elevated risk of serious illness and death from the new coronavirus: COVID-19 kills an estimated 13.4% of patients 80 and older, compared to 1.25% of those in their 50s and 0.3% of those in their 40s. The sharpest divide came at age 70. Although 4% of patients in their 60s died, more than twice that, or 8.6%, of those in their 70s did, Neil Ferguson of Imperial College London and his colleagues estimated in their paper, published in *Lancet Infectious Diseases*.

Experts do not know a lot about COVID-19 immunity, especially how long immunity lasts, what kind of protection it offers, and whether reinfection is possible. These are all questions that researchers around the world, including those at the World Health Organization, are still trying to figure out.

Name: Mr. Rajesh Gopal Mukkannavar

SECOND PRIZE

College Address: KLE's, P.C. Jabin College, Hubli, Karnataka

Contact No.: 9902797748

Email id: rajeshgmkr@gmail.com

Introduction

The coronavirus COVID-19 pandemic is the defining global health crisis of our time and the greatest challenge we have faced since world war two. Countries are racing to slow the spread of the virus by testing and treating patients, carrying out contact tracing, limiting travel, quarantining citizens, and cancelling large gatherings such as sporting events, concerts, and schools.

The pandemic is moving like a wave- one that may yet crash on those least able to cope. But COVID-19 is much more than a health crisis. By stressing every one of the countries it teaches, it has potential to create devastating social, economic and political crisis that will leaves deep scars.

Coronavirus

Researchers first identified a coronavirus in 1937, isolating one that was responsible for a type of bronchitis in birds that had the potential to devastate poultry stocks. Scientists found evidence of human coronaviruses in the 1960s, in noses of people with common cold. Human coronaviruses that are particularly prevalent include 229E, NL63, OC43 and HKU1.

The name 'coronavirus' comes from the crown like projections on their surfaces. "Corona" in Latin means 'halo' or 'crown'. Novel coronavirus has many spikes on its outer surface. These spikes are used by the virus to hook onto ACE-2 protein (which works for regulation of an enzyme involved with maintenance of blood pressure among other things and it is found on many surface tissues including in lungs) and enter the cell.

Once inside the cell, novel coronavirus multiplies fast and eats up everything before forcing the cell to burst and release next generation viruses to feed on new cells. In two to ten days, there will be enough novel coronaviruses in the body to start showing symptoms like fever, dry cough and breathlessness among others.

Immune system

Our immune system is our body's defense against infections and other harmful invaders. Without it, we would constantly get sick from germs such as bacteria or viruses. Our immune system plays a major role in preventing the COVID-19 disease with proper medication.

When the coronavirus that causes COVID-19 first began to spread, virtually nobody was immune. Meeting no resistance, virus moved quickly through communities and ultimately around the world. In the absence of an effective treatment or vaccine, stopping it will require a significant percentage of the population to acquire immunity, a state that epidemiologists refer to as herd immunity.

In short, the term describes a condition in which most of a population is immune to an infectious disease, thus conveying indirect protection to those who are not immune. This indirect protection is called herd immunity, also sometimes referred to as herd protection. For example, if 80% of a population is immune to a virus, four out of every five people who encounter someone with the disease won't get sick, and thus won't spread the disease any further. In this way, spread of infectious diseases can be kept under control. Depending on how contagious an infection is typically 50% to 90% of population must be immune to achieve herd immunity.

If SARs-CoV-2, virus that causes COVID-19, is like other coronaviruses that currently infect humans, we can expect that people who get infected will be immune for months to years, but probably not for their entire lives.

Ultimately, to know how many people are immune to SARs-CoV-2, we'll need to know not only how many people have antibodies, but also how protective those antibodies. Although we don't know for sure whether people who have antibodies are immune, it's very likely that most people without antibodies to SARs-CoV2 are not immune because this is new virus to which most people's immune systems have never been exposed. Therefore, although we don't know exactly how many people are immune to SARs-CoV2, studies show that most people- at least two-thirds do not have antibodies, and therefore do not have immunity, against SARs-CoV-2. In other words, most of us are still very much at risk of developing COVID-19.

Proteins are important for our immunity. Not enough protein in our diet can weaken our immune system. Many disorders can weaken the immune system and cause a person to become immune compromised. Thus disorders can range from birth, while others result from environmental factors. Our immune system can also be weakened by smoking, alcohol and poor nutrition.

Deaths due to Corona

The first death linked to the coronavirus disease was reported on January 10 in China's Wuhan, where the outbreak was first reported. In India, it was reported in Karnataka on March 11. Globally, 371023 people have died so far from the coronavirus COVID-19 outbreak and there are 6161928 confirmed cases in 213 countries and territories and in India, total cases are about 182490 and in these 5186 deaths occurred and 86984 are recovered as of May 31, 2020.

The recovery rate in the country is recorded at 47.7%, while the death rate is 2.8%. People of all ages can be infected by new coronavirus (COVID-19). Older people and people with pre-existing medical conditions appear to be more vulnerable to becoming severely ill with virus. WHO advises people of all ages to take steps to protect themselves from virus, for example by following good hand hygiene and good respiratory hygiene.

Seeing the number of deaths occurred we can conclude that the people aged above 60 years(68%-72%) are at high risk of COVID-19. The people aged in-between 20 to 60 years are about 23%-25%, and Children and youths between 0 to 20 years are about 4%-5%. And coming to sex ratio, males (60%-62%) died more than females(38%-40%).

Patients who reported no pre-existing medical conditions had a case fatality rate of 0.9%. Pre-existing illnesses that put patients at higher risk of dying from COVID-19 infection are cardiovascular diseases (13.2%), Diabetes (9.2%), chronic respiratory disease (8%), hypertension (8.4%) and cancer (7.6%).

Comparison with developed and developing countries

The coronavirus pandemic has overwhelmed health systems in Europe and North America. The US, France, Italy, Spain and the UK have all experienced shortages of doctors, ventilators, personal protective equipment and testing capacity. But it's going to be even worse in poor countries where medical resources are scarce. In fact, COVID-19 is the biggest disaster for developing nations in our lifetime. If ever there was a time for concerned citizens and political leaders in both developing and richer countries to come together, it's now. Poorer people are at greater risk of catching the virus and are more likely to suffer the worst effects of an economic shock. And the poorer the country, less capable it is of addressing people's pressing

needs, from identifying and treating cases of virus to supporting communities and business deprived of income. The vast majority of people, who are employed in the informal sector and receive no unemployment, sickness or other benefits and more than a third of all jobs and incomes, could be lost as a result of COVID-19.

In many developing nations the economic shock has come first, as governments have locked down their economies to reduce the speed of contagion. As a result, countries in Africa and Latin America, together with Pakistan, India and Bangladesh, are expected to suffer their greatest ever economic decline. One immediate effect of the lockdown is hunger, as transport and disrupted and food supply in many countries - already depleted after years of drought, extreme weather events and recent locust infestations- becomes scarce.

Conclusion

Many leaders are doing all they can under the circumstances, but both domestic and international action is required to limit the damage caused by COVID-19. There is one lesson COVID-19 has taught us, it is how interconnected our lives are. We are only as strong as our weakest links. In the case of COVID-19, if one country is a pandemic hotspot, we are all at risk of reinfection. Now more than ever we must show solidarity with those beyond our borders. Our health depends on the health of others. If we are to look forward to a better future, people elsewhere must too.

Each person who has died of COVID-19 was somebody's everything. Even as we mourn for those we knew, cry for those we loved and consider those who have died uncounted, the full tragedy of the pandemic hinges on one question: how do we stop the next 1, 00,000? We have known from the beginning there are some measures that help protect us from the virus, such as physical distancing, using masks, stock up on home supplies, medicines and resources, keep your hands clean, wash your hands, so on. Following the government instructions will help us to be safe.

Some positive impacts because of this Coronavirus are Social distancing has improved air quality, reduced carbon emissions and global warming, reduction of environmental noise well.

There is a need for regular educational interventions and training programs on infection control practices for COVID-19 across all healthcare professions. Occupational health and safety are of paramount importance to minimize the risk of

transmission to healthcare students and professionals and provide optimal care for patients.

Name: Mr. Afaq Ahmad Dar

THIRD PRIZE

College Address: Department of Zoology, Aligarh Muslim University, Aligarh

Email Id: afaqamuzoo@gmail.com

Coronavirus (CoV) are zoonotic viruses, belonging to family Coronaviridae. These are single stranded RNA viruses infecting humans, cats, camels and birds. The various diseases caused by Coronavirus include common cold, Severe Acute Respiratory Syndrome (SARS-CoV), and Middle East Respiratory Syndrome (MERS-CoV). Most common symptoms of COVID-19 are fever, dry cough, sore throat tiredness, runny nose, vomiting, joint pain, fatigue, diarrhea, phlegm and difficulty in breathing. However, severe infection results in kidney failure, pneumonia, severe acute respiratory syndrome and even death. Older people and others who are already having medical problems such as heart problems, diabetes and blood pressure are likely to develop serious illness. Upon inhalation, the viral particles use the S protein to latch onto host cells and slowly infiltrate the upper portions of respiratory tract. This new virus came to light when Chinese government informed WHO about large number of pneumonia cases of unknown reason on December 31, 2019 in Wuhan city of China. The most recently discovered coronavirus is named as SARS-CoV-2 and the disease is now called COVID-19. The etiologic agent was identified and characterized in China. Phylogenetic analysis reveals that SARS-CoV-2 is closely related to MERS-CoV. SARS-CoV-2 enters the human body through respiratory droplets.

Immunity development against any pathogen under natural conditions typically takes place over 1-2 weeks. Upon entry of virus inside the body, non-specific innate response is activated followed by activation of adaptive response where the body makes antibodies that specifically bind to the virus. These antibodies are proteins called immunoglobulin. The body also makes T-cells that recognize and eliminate other cells infected with the virus. This is called cellular immunity. This adaptive response may lead to the elimination of virus from the body, and if the response is strong enough, may prevent severe illness or re-infection by the same virus. This process is often measured by the presence of antibodies in blood. One of the most important traits of immune host defense against pathogens is memory, which improves survival if the same pathogen is reencountered. However, immune memory can also be deleterious, driving autoimmune diseases and the rejection of transplanted

organs. Memory characteristics have been considered a fundamental property of adaptive immune cells such as T and B lymphocytes.

However, innate immune cells such as myeloid cells and natural killer (NK) cells can also adapt to previous encounters with pathogens through epigenetic, transcriptional, and functional reprogramming, called trained immunity. The discovery of this innate immune memory emerged from studies with live vaccines and was described as being largely nonspecific.

An emerging zoonotic pathogen — such as SARS-CoV-2 — is unique in the sense that humans have never been exposed to it, so our immune system has never mounted a response to this specific virus. When we are exposed to an emerging pathogen, our immune system mounts different types of responses within seven to 14 days. Antibodies are one type of response. They are secreted into the blood and, more importantly, are present at sites of infection. In the case of SARS-CoV-2, antiviral antibodies can be found in the blood after infection, but they are also presumably present in the respiratory system, where the virus resides and propagates. Although the presence of antibodies in an individual confirms that an infection has occurred, antibodies alone cannot differentiate between a historical versus current infection. Following infection, detectable IgM and IgG antibodies develop within days to weeks of symptom onset in most infected individuals. Depending on the type of virus, antibodies in the blood may or may not confer protection against the virus. We can only hope that the antibodies circulating in the blood of patients infected with SARS-CoV-2 are good indicators of protection.

There is a chance that there is only a weak connection or no connection at all, between antibody presence in the blood and protection against SARS-CoV-2. This is because antibodies in the blood will have to find their way to the respiratory system where the virus resides to exert their protective functions. Sometimes they do not end up in the lungs where they are most needed for protection. Also, these antibodies may not be of the right type to protect against infection or there may not be enough of them present to establish protection. It is speculated that protective antibodies bind to the molecular structures on the surface of SARS-CoV-2, especially its spike protein. The spike proteins are the points that cover the surface of the virus, forming the “crown” that gives coronaviruses their name. The virus uses these spikes to attach to cells of the respiratory system. The antibodies that bind to SARS-CoV-2’s spike

protein may prevent the virus from attaching to cells. Viruses that are not able to attach and enter a cell cannot propagate and will eventually die out

WHO continuously monitored the antibody responses to SARS-CoV-2 infection? Most of studies show that people who have recovered from infection have antibodies to the virus in blood. However, some of these people have very low levels of neutralizing antibodies in their blood, suggesting that cellular immunity is critical for recovery. As of now no study has shown whether the presence of antibodies to SARS-CoV-2 confers immunity to subsequent infection by this virus in humans. Director-General of the Council of Scientific and Industrial Research (CSIR), Dr. Shekhar Mande reports said that Herd immunity as an alternative strategy to combat Covid-19 crisis in the country. Herd immunity is a natural process wherein a large percentage of the population, approximately 70 to 80 per cent, is exposed to the Covid-19 virus and acquires immunity. This is either because they have recovered or through vaccination. This could help curb the spread of the disease, as there would be a lack of carriers for the virus once the majority of the population has antibodies against the virus and are immune.

Moreover Shekhar Mande said, the strategy is “too large a risk.”. Countries can mitigate the risks of the pandemic and curb the spread of infection with interventions. Shekhar Mande also warned that there could potentially be a second wave of the virus in India even if infections go down and people must be prepared for it. The CSIR has adopted a five-pronged approach to combat the pandemic. This includes surveillance, diagnostic, intervention through the development of new therapies, hospital assistive devices and supply chain model.

There are several factors by which we can conclude that Indians have better immunity than rest of the world. Some of the factors are summarized below. The broad-based immunity of the Indian population due to the extensive microbial load and general exposure to a variety of pathogens could prime Indians immunologically for broad specific and/or cross-reactive memory T-cells, though mechanisms that need to be explored. Further, the persistent usage of BCG vaccination in India since the late 1940's could have provided a boost to develop robust innate and adaptive immunity against infectious agents and that could include the COVID-19 virus as hypothesized by others.

The second and equally important factor is related to environment and food habits that may provide some degree of resistance to infection. Curcumin is known to

have antioxidant, anti-inflammatory, anti-bacterial and wound healing properties. Several reports suggest its potential in treating arthritis, cancers, cardiovascular and inflammatory bowel diseases. I anticipate that these epigenetic, environmental and lifestyle related factors could influence largely unexplored immunity against COVID-19 here. The third very important factor is the issue of extensive HLA diversity of the Indian population with existence of several ‘novel alleles’ and ‘unique haplotypes’. For example, the allele families of HLA-A2, A33, B27, DR4 and many others present remarkable diversity with existence of several molecular subtypes including those that occur in Caucasians, Africans, Orientals and other population groups.

Among all the deaths reported, fever was seen in 88% of infected patients, dry cough 68% followed by fatigue 38% and phlegm 33% of cases. 48.7% deaths were observed in persons having age of 75 plus, while as 24.9% deaths were observed in persons having age of 65-74, 22% in age group of 45-64, 3.9% in 18-44 and 0.006 % in 0-17 age group.

Name: Mr. Abhinandan Appasaheb Charate

College Address: Basavaprabhu Kore Arts, Science and Commerce College
Chikodi -591201, Karnataka.

Mobile number: 9986689108, 8123663231

Email ID: abhinandancharate2001@gmail.com

Introduction

WHO has published guidance on adjusting public health and social measures for the next phase of the covid-19 response? Same government have suggested that the detection of antibodies to the SARS-CoV-2, the virus that causes covid-19, could serve as the basis for an immunity passport that would enable individuals to travel or to return to work assuming that they are protected against re-infection. There is currently no evidence that people who have recovered from COVID-19 and have antibodies are protected from a second infection.

How does your immune system work?

When a virus attacks the body, the immune system churns out a variety of antibodies that recognize specific features of the bug and mount repeated attacks until it is purged from the body.

Though the antibodies dwindle after a disease is resolved, the immune system can repeat a similar attack if the same pathogen is encountered again, often quashing the new infection before it causes severe symptoms.

To the immune system, some pathogens are unforgettable. One brush with the virus, like those that cause chickenpox or polio, is usually enough to protect a person for life.

Other microbes, however, don't have such long-lasting effects. This applies to the four coronaviruses that cause a subset of common cold cases, among which the Covid-19 is one. Immunity against these viruses seems to wane in a matter of months or a couple of years, which is why people get colds.

In the body's natural fight against viruses, vaccines safely simulate the process by exposing the body to harmless versions of a germ, teaching the immune system to identify it without the need to endure the potentially grueling disease.

When a virus attacks its first cell in the body, that cell has two jobs to do before it dies, said Benjamin Tenover, a professor of biology at the Mount Sinai Icahn School of Medicine. The infected cell needs to issue a call for reinforcements, sending out a cascade of chemical signals that will activate an army of immune cells to come battle the invading virus. And it needs to issue a warning to other cells around it to fortify them, something it does by releasing proteins called interferon. When interferon land on neighboring cells, they trigger those cells to enter defensive mode. The cells slow down their metabolism, stop the transport of proteins and other molecules around their interiors, and slow down transcription, the process by which genetic instructions become proteins and other molecules.

In many people, even this crippled immune response is enough to beat back the virus. But for reasons not yet fully understood, some people enter a vicious cycle. As the virus keeps replicating, the immune army that arrives to battle it starts doing its job: attacking infected cells, digesting debris and chemicals spewed out by dying cells, even killing nearby cells in an attempt to staunch the damage. Unfortunately, if the virus continues to penetrate lung cells, this army may do more damage than good. The lung tissue becomes hopelessly inflamed; the blood vessels begin to leak fluids into the lung; and the patient begins to drown on dry land. This seems to be the reason that some people become severely ill a couple of weeks after their initial infections, Tenover said. "At that point, it's not about what the virus has done," he said. "At that point, it's about controlling the severe inflammation."

This cycle is very bad news. But there is a glimmer of hope in the findings. Because the system that calls in the army of immune cells works fine, it seems likely that survivors of COVID-19 will retain immunity to the virus. And indeed, studies have found high levels of antibodies to SARS-CoV-2 in recently recovered patients. Antibodies are proteins made by immune system cells called B cells. They stick around in the blood post-infection and can bind to the virus, either neutralizing it directly or marking it for destruction by other immune cells.

The coronavirus SARS-CoV-2 has only been circulating in human hosts for five or six months, which means that there is simply no way to know whether immunity to the disease lasts longer than that. How long immunity lasts is a big question, Tsinghua's Dong told Live Science via email.

"Per our findings, we can only confirm that COVID-19 patients can maintain the adaptive immunity to SARS-CoV-2 for 2 weeks post-discharge," he wrote.

Evidence from other coronaviruses suggests that immunity probably lasts longer than that, Vabret said. Along with Mount Sinai colleagues Robert Samstein and Miriam Merad, Vibrat led more than two dozen doctoral students and postdoctoral researchers in an effort to review the avalanche of immunology research coming out about the coronavirus in journals and on preprint servers that host scientific papers before peer review. Studies of SARS-CoV-2's proteins and genetics suggest that the virus seems likely to induce a long-term immune response similar to that of other coronaviruses, like 2002's SARS 1, or Middle Eastern respiratory syndrome (MERS), which arose in 2012.

Deaths

There are a many deaths around the world due to covid-19, and first 1 month there is a lot of deaths control in India. As our prime minister suggestion that some days of lockdown in India. In Kerala first case found. Then this corona virus is gradually increases in India.

India's COVID-19 case fatality rate (CFR, deaths/cases) has always remained low. But data from some European and Asian countries show that since the 10th week of 2020, “excess deaths” have surged. In countries with relatively poorer income levels such as Indonesia and Ecuador, a very small % of those excess deaths have been attributed to COVID-19. With historically poor registration of deaths and medically-certified death rate, is India too undercounting its dead?

Fatality rate

India's CFR of 3.1% (in red) as of May 18 is among the lowest in countries with more than 1 lakh cases and much below the world average of 6.6%. The chart plots cumulative cases against the CFR as of May 18.

The chart shows the weekly excess deaths (deviation in mortality from the expected level) in 24 countries in Europe from January 1, 2016 to May 15, 2020. In 2020, deaths increased exponentially from the 12th week due to the COVID-19 pandemic. The spike recorded in the first 10-12 weeks of 2017, 2018 and 2019 can be attributed to the flu season which was unusually lethal. In 2020 the flu season was relatively less deadly.

COVID-19 deaths among excess

The graph plots the % share of COVID-19-related deaths among the excess deaths for nations which had such data. In high-income countries (represented in blue), the share of COVID-19 deaths are higher among the excess deaths. In upper middle income countries (represented in red) such as Russia, Turkey and Ecuador and lower middle income countries such as Indonesia (represented in orange) the share of COVID-19 deaths among the excess deaths was much lower. This suggests that the relatively poorer countries may not be testing the dead for COVID-19 or they may be undercounting them due to comorbidities.

On April 30, West Bengal announced that 105 COVID-19 positive patients had died, but did not count 72 of them as they died due to comorbidities. On May 18, the Delhi government asked its hospitals not to take samples of dead people to test for COVID-19. Also, while the Delhi government’s official COVID-19 death toll was 68 until May 8, the number of such deaths in just two hospitals in the city that The Hindu accessed was 107. These COVID-19-specific stories along with the fact that India medically certifies only 22% of deaths (as of 2017) suggest that India may be undercounting its dead.

As per today's information 70,33,333 cases have been detected worldwide, with 403,211 deaths and 3153,233 people now recovered. In India, there have been 258,090 cases confirmed, 7,207 people have died and 124,095 people have recovered from the virus. The Indian Council of Medical Research (ICMR) has said that 47,74,434 samples were tested for COVID-19 in the country till 9.00 am today. Of these, 1,08,048 were tested in the last 24 hours. With 85,975 confirmed cases of COVID-19 so far, Maharashtra remains worst-affected state in the country, followed by Tamil Nadu (31,667) and Delhi (27,654).

Conclusion

There is a lot of Economic effect around the world, and in India also. And in some news say India come 4 years economy came down in India. And many families lost their members. We know how we safe from corona virus and we must follow that rules.

Name: Miss. Aisha Rafik Mamlekar

College Address: Narayan Zantye College of Commerce, Bicholim, Goa

Mobile No.: 8007313533, 9763917861

Email id:-aishasairamamlekar10@gmail.com

Introduction

Corona viruses are large family of viruses which can cause illness in animals or humans .In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus causes coronavirus diseases COVID-19.

COVID-19 is an infectious disease caused by the most recently discovered coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is now a pandemic affecting many countries globally.

How do you know that it is covid-19?

The most common symptoms of COVID-19 are fever, dry cough, and tiredness. Other symptoms that are less common and may affect some patients include aches and pains , nasal congestion, sore throat , diarrhoea, loss of taste and smell or a rash on skin or discoloration of fingers and toes. These symptoms are mild and begin gradually. Some people become infected but only have very mild symptoms. Most people recover from the disease without needing hospital treatment. Around 1 out of every 5 people who gets COVID-19 becomes seriously ill and develops difficulty in breathing. Older people and those with underlying medical problems like high blood pressure, heart and lung problems and diabetes are at higher risk of developing serious illness. However, anyone can catch COVID- 19 and become seriously ill. People of all ages who experience fever or cough associated with difficulty in breathing, chest pain or loss of speech must seek medical attention immediately.

Well if you have minor symptoms such as cough or a mild fever you can stay at home isolate yourself and follow the instruction of self-isolation or else when you attend a health facility wear a mask and at least keep 1 meter distance and try not to touch the surfaces it is not only for you if you find people having these symptoms tell them these following instructions.

Immunity

You can easily catch corona from the person who is having the disease irrespective of your immunity or how healthy you are. You can get it through person to person through small droplets from the mouth or nose, which are expelled when a COVID-19 coughs, sneezes or speaks well if you read above doctors have told us to maintain distance as these droplets are heavy and do not travel far and quickly sink to the ground but you might get corona if you breath these droplets. These droplets can land on objects and surfaces around the person such as tables, doorknobs and handrails. People can become infected by touching surfaces or objects, then touching their eyes nose or mouth. This is why it is important to wash your hands regularly with soap and water or clean with alcohol-based hand rub.

WHO is assessing on-going research on the ways that COVID-19 is spread and will continue to share updated findings? It is possible to catch the corona from mild corona patient as well several corona patients.

Yet there is no treatment or medicine available for the disease it is cureless so our crucial shield against COVID-19 is our immunity. Scientist has suggested that a fair dose of millets intake would boost our immunity levels, which would help us, fight against coronavirus. There are many sources of foods that are known as immunity boosters and being a staple cereal, millets may prove to be a promising source, especially relevant to the times of COVID-19 virus pandemic situation. Immunity provides protection to life, mediated through cellular response. The body promotes systematic immune processes by regulating the formation of Lymphocytes, antibodies and cytokines.

Millions of people have been infected with the virus have to rely on the bodies rather than a vaccine or targeted medication to fight the virus. From coronavirus some people develop only a mild infection while others become critically ill and died too. It can cause direct viral damage this happen in Wuhan the place where it all started the virus hijack the host cell mechanisms to make more copies of itself. Damage results from either viruses taking over the cell completely and causing it to die or immune cells recognizing the viral infection and mounting a defense triggering cell death. If large number of cells dies, then the affected organ cannot function effectively. Studies have shown that patients died from the virus caused the damaged other organs, including the kidneys. The deaths rate is more in children and old people because the

influenza virus weakens the usual protective mechanisms of the lung, allowing bacteria to establish and multiply.

India

In India Maharashtra, Kerala, Karnataka has the most corona disease and the numbers of cases are increases at a furious rate India took a measure method of lockdown but it didn't help in a long way and people were allowed to travel again which in turn increase these cases and all states are getting affecting slowly hospitals are getting full and no area to transfer corona cases. In a long run if it is not control then it might affects all the citizen ,India has big population and the number of death are also increasing such virus is like a curse to everyone along with other natural calamities in India. People with corona are travelling all over spreading it to others some are also not taking strict actions against it ,people are avoiding quarantine when they have corona these are the major problems India is facing right now.

Conclusion

Over everything which is going on I can say is that our best weapon is our immunity and staying at home with necessary precaution which can help us with others and finishing COVID-19 with these deaths rate can be controlled. Immunity helps us fight back it but its reaction can be different some cells can damaged and leads to organ failure and causes death the only option which are left with is home quarantine and avoiding social and human contacts. Let's fight COVID-19 together.

Name: Miss. Aishwarya M. R.

College Address: Kuvempu University, Shivamogga, Karnataka

Mobile No: 9448849820

Email iD: aishwaryamr115@gmail.com

Introduction

“If health is gone everything is gone”, health is wealth and nothing is supreme than what our health stands at the present moment. A healthy person (weather rich or poor)) lives more happy and peaceful life than any rich person having a diseased body. There are number of routes by which a person can become infected with an infectious agent. Infectious diseases are caused by organisms, usually microscopic in size, such as bacteria, viruses, fungi or parasites, directly or indirectly from one person to other. Nowadays a new respiratory disease called COVID-19 is spreading across the world. Covid-19 was first identified during December, 2019 in Wuhan city of China. It is now causing a large number of deaths across the world. Any certified treatment of covid-19 has not been discovered. Coronavirus (COVID-19) is an infectious disease which causes illness in the respiratory system in the human, by the newly discovered coronavirus.

It is the new virus that is impacting the whole world badly as it is spreading primarily through contact with the person. Most of the people infected with COVID-19 will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory diseases and cancer are more likely to develop serious illness. The best way to prevent and slow down transmission is to protect from infection by washing hands or by rubbing an alcohol frequently and not touching face. At this time, there are no specific vaccines (or) treatments for covid-19. However, there are many ongoing clinical trials evaluating potential treatments.

COVID-19 Immunity

A series of novel coronavirus disease 2019 caused by severe acute respiratory syndrome coronavirus 2(SARS-Cov-2). One of the crucial shields against Covid-19 is immunity. Patients with good immunity levels are able to fight the infection better. IIMR, point out that the most important elements that maintain our immune system is

a healthy balanced diet, which contains all vitamins and minerals in balanced proportion. The human immunity system plays significant roles in the resistance of foreign pathogens and progress of pneumonia. The development of immunity to a pathogens through natural infections is a multi-step process that typically takes place over 1-2weeks. The body responds to a viral infection immediately with a non-specific innate response in which macrophages, neutrophils and dendritic cells slow the progress of virus and may even prevent it from causing symptoms. This non-specific response is followed by an adaptive response where the body makes antibodies that specifically bind to the virus. These antibodies are protein called immunoglobulin. A lot of people with covid-19 have gotten sick in two ways: First, they felt tired and fatigued, but then they seem to bounce back .T-cells may be able to keep the virus at bay for a while, but if the infection persists, the body will need to make more even if the specific antibodies are ready for action. When this happens, the immune system will unleash its version of a body slam: a cytokine storm, named for the chemical signals that kick-start a fever to kill off the virus. The body also makes T-cells that recognize and eliminate other cells infected with the virus. This is called cellular immunity. This combined adaptive response may clear the virus from the body, and if the response is strong enough, may prevent progressing to severe illness or re-infection by the same virus.

This process is often measured by the presence of antibodies in blood. T-cells were decreased on Covid-19 patients, excessive activated immune response was caused by pathogenic Th1 cells and inflammatory CD14⁺ CD16⁺ monocytes may connect to pulmonary immune pathology, leading to deleterious clinical manifestations and even acute mortality after SARS-Cov-2 infections. SARS-Cov-2 might damage lymphocytes, especially T-lymphocytes, and the immune system was impaired during the period of disease to cause tissue injury. Decreased lymphocytes subsets and increased neutrophil, C4 and Hs-CRP were independently associated with high risks of mortality and organ injury. Until a vaccine is available, our immune system will need to adapt unaided to Covid-19. One of the first ways scientists can begin to understand the immune response to SARS-CoV-2 is through serology testing, blood tests that look for the telltale antibodies produced by B-cells.

The food we eat plays a key aspect in determining our overall health and immunity. Eat low Carb diets, as this will help control high blood sugar and pressure. Certain foods like mushrooms, tomato, bell pepper and green vegetables like broccoli,

spinach are also good options to build resilience in the body against infections. Drink up to 8-10 glasses of water every day, to stay hydrated. Hydration will help flush out the toxins from the body and lower the chances of flu. Regular exercise improves metabolism, which has a direct correlation with body immunity. Apart from maintaining a healthy lifestyle and taking supplements the Indian health ministry is also suggesting few organic and natural ways to practice as preventive measures to fight COVID-19. The ministry of AYUSH has recommended the following self-care guidelines as preventive measures and to boost immunity with special reference to respiratory health.

COVID-19 Deaths

The coronavirus (COVID-19) is affecting 213 countries and territories around the world and 2 international conveyances. Throughout the world 362,091 people died due to coronavirus. Among 213 countries maximum number of deaths occurred in United States. In India, 4706 people died, among 165,799 cases. As of 6th June 2020, a total of 236,657 cases, 114,073 recoveries and 6,642 deaths in the country. In Karnataka, 2553 cases were found and 50 people died. As of May 17, of the total active 596 cases in the state, 67 are high-risk ones. Gadag, Chitradurga and Dakshin Kannada have the highest percentage of high-risk in the state. With 11.2% (67cases) of the cases being high risk at the moment, the critical care support team is analyzing a wide net of patients right from Covid-19 suspects and asymptomatic patients, to SARI, ILI, senior citizens and even covid-19 deaths that have occurred.

The COVID-19 virus spreading can be prevented by maintaining social distance from the people, washing hands with alcohol frequently and by not touching the face. People wear mask, those having symptoms of fever, cough. Ensures that the surfaces and objects are regularly cleaned. As there is no specific treatment for disease cause by a novel coronavirus. People should understand basic information about corona virus disease. Be aware of fake information's that may circulate by online. We all must follow the lockdown rules.

Name: Miss. Amruta M Khanai

College Address: KLE'S, G I Bagewadi College, Nipani, Karnataka

Mobile No.: 9019454906

Email id: amrutakhanai@gmail. com

Immunity

Covid-19 or corona virus was declared as a global pandemic by the world health organization and while the countries are grappling with imminent dangers this virus poses to humanity there are few key measures that individuals can take to fight this pandemic. While it is crucial to mention hygiene standards like washing your hands frequently, especially if you have travelled by public transport. Using on alcohol sanitizer, in case you are travelling to disinfect your hands, wearing a mask (cover your nose and mouth) and avoiding touching your hand or mouth. There are also certain methods to improve your immunity which are paramount at this juncture.

Individuals in certain pre-existing illness like diabetes, hypertension, cardiovascular disease, and respiratory issues are at a higher risk of having covid-19 complications, it also aggravates with age as the general immunity reduces as you get older. In the younger generation with no under lying illnesses, covid-19 can result in a minor infection, provided you have robust immunity and do not engage in activities like smoking or vaping to combat the onslaught of the virus. Here is a list of measures you can undertake to improve your immunity.

Improve Your Diet

The food you eat plays a key aspect in determining your overall health and immunity. Eat low carb diets, as this will help to control high blood sugar and pressure. A low carb diet will help slow down diabetes and focus on a protein rich diet to keep you in good shape and regularly consume vegetables and fruits rich in Beta-carotene, ascorbic acid and other essential vitamins. Certain foods like mushrooms, tomato, bell pepper and green vegetables broccoli, spinach are also good options to build resilience in the body against infections. You can also eat supplements rich omega 3 and 6 fatty acids for your daily dose, if stepping out to buy groceries is not an option during social distancing. Some natural immunity supplements include ginger, gooseberries and turmeric. Some of these super foods are common ingredients in Indian dishes and snacks. There are several herbs that help in

boosting immunity like garlic, basal leaves and black cumin. Certain seeds and nuts like sunflower seeds, flax seeds, pumpkin seeds and melon seeds are excellent source of protein and vitamin E.

Probiotics like yoghurt, yakult and fermented food are also excellent sources to rejuvenate the composition of gut bacteria, which is important for nutrient absorption by the body. These are good options for the older generation too.

Don't Compromise on Sleep

Good snooze time for 7-8 hours is the best way to help your body build immunity; lesser sleep will leave you tired and impair your brain activity. The lack of sleep will prevent the body from resting and this will impair other bodily functions that will have a direct impact on your immunity. Lack of sleep adversely affects the action of the flu vaccine.

Stay Hydrated

Drink up to 8-10 glasses of water every day, to stay hydrated. Hydration will help flush out the toxins from the body and lower the chances of flu. Other alternatives include juices made of citrus fruits and coconut water, to beat the heat.

Supplements and immunity boosting food

While all the above mentioned tips will definitely help, the need of the hour is a quick boost to your immunity system to keep it fighting fit. If you are concerned whether you are getting the right amount of nutrients from your diet, consult with your doctor about a supplementation regimen to boost your immune system. Here are a few common supplements and super foods that can help.

Vitamin C

This particular vitamin is a crucial participation in the army of immunity. It helps prevent the common cold. It acts as a powerful antioxidant and protects against damage induced by oxidative stress. For severe infections, including sepsis and acute respiratory distress syndrome (ARDS), high dose intravenous vitamin C treatment has been shown to significantly improve symptoms in patients.

Vitamin-D

Vitamin D supplements have a mild protective effect against respiratory tract infections. Most people are deficient in Vitamin-D, so it's best to consult with a doctor about taking a Vitamin D supplement to boost immune response.

Zinc

Zinc is a vital component to WBC (white blood corpuscles) which fight infections. Zinc deficiency often makes one more susceptible to flu, cold and other viral infections. It is advisable to take a zinc supplements, especially for older people.

Turmeric and Garlic

The bright yellow spice, Turmeric, contains a compound called curcumin, which boosts the function. Garlic has powerful anti-inflammatory and antiviral properties which enhances body immunity.

Apart from maintaining a healthy lifestyle and taking supplements, the Indian health ministry is also suggesting few organic and natural ways to practise as preventive measures to fight COVID-19. The Ministry of AYUSH has recommended the following self-care guidelines as preventive measures and to boost immunity with special reference to respiratory health.

- Drink warm water throughout the day.
- Practice Meditation, Yoga Sana, and Pranayama.
- Increase the intake of Turmeric, Cumin, Coriander and garlic.
- Drink herbal tea or decoction of Holy basil, Cinnamon, Black pepper, Dry Ginger and Raisin.
- Avoid sugar and replace it with jiggery if needed.
- Apply Ghee(clarified butter), Sesame oil, or Coconut oil in both the nostrils to keep the nostrils clean.
- Inhale steam with Mint leaves and Caraway seeds.

While the battle against the covid-19 pandemic is fought by our health care workers, we can do our bit by limiting our exposure to the virus by studying indoors, social distancing, eating healthy, hydrating and following basic hygiene protocol.

Deaths

The covid-19 pandemic in India is part of the worldwide pandemic of corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). The first case of covid-19 in India, which originated from china, was reported on 30 January 2020. As of 5th June 2020, the MoH & FW has confirmed a total of 2,26,770 cases, 1,09,462 recoveries (including 1 migration) and 6,348 deaths in the country. India currently has the largest number of confirmed cases in Asia, with the number of total confirmed cases breaching the 1,00,000 mark on 19 May and 2,00,000 on 3 June. India’s case fatality rate is relatively lower at 2.80%, against the global 6.13%, as of 3 June. Six cities account for around half of all reported cases in the country-Mumbai, Delhi, Ahmedabad, Chennai, Pune and Kolkata. As of 24 May 2020, Lakshadweep is the only region which has not reported a case. On 22 March, India observed a 14- hour voluntary public curfew at the instance of the Prime Minister Narendra Modi. It was followed by mandatory lockdowns in COVID-19 hotspots and all major cities. Further, on 24 March, the Prime Minister ordered a nationwide lockdown for 21 days, affecting the entire 1.3 billion population of India. On 14 April, the PM extended the nationwide lockdown till 3rd May which was followed by two-week extensions starting 3rd and 17th May with substantial relaxations. Beginning 1st June the Government has started unlocking the country (barring containment zones) in three unlocks phases.

The UN and WHO have praised India’s response to the pandemic as Comprehensive and robust, terming the lockdown restrictions as aggressive but vital for containing the spread and building necessary healthcare infrastructure. The Oxford COVID-19 government Response Tracker (OxCGRT) noted the government’s swift and stringent actions, emergency policy making, emergency investment in healthcare, fiscal stimulus, investment in vaccine and drug R & D. it gave India a score of 100 for its strict response. Michael Ryan, chief executive director of the WHO’s health emergencies programme noted that India had tremendous capacity to deal with the outbreak owing to its vast experience in eradicating Smallpox and Polio. Other commentators have also raised concerns about the economic fallout arising as a result of the pandemic and preventive restrictions.

COVID-19 deaths among excess

The graph plots the % share of COVID-19 related deaths for nations which had such data. In high income countries (represented in blue), the share of COVID-19 deaths are higher among the excess deaths. In upper middle income countries

(represented in red) such as Russia, Turkey and Ecuador and lower middle income countries such as Indonesia (represented in orange) the share of COVID-19 deaths among the excess deaths was much lower. This suggests that the relatively poorer countries may not be testing the dead for COVID-19 or they may be undercounting them due to comorbidities.

Name: Miss. Ankit P. Gondane

College Address: Manoharbai Patel Institute of B. Pharmacy Gondia, Maharashtra

Mobile No.: 8805348714

Email id: ankitgondane111@gmail.com

Introduction

Novel corona virus- induced pneumonia, which was named as coronavirus disease 2019 (COVID-19) by the WHO on the February 11, 2020, has rapidly increased in epidemic scale since it first appeared in Wuhan, China, in December 2019. The virus is not a living organism, but a protein molecule covered by a protective layer of lipid (fat), which, when absorbed by the cells of the ocular, nasal or buccal mucosa, changes their genetic code. (Mutation) and convert them into aggressor and multiplier cells. Since the virus is not a living organism but a protein molecule, it is not killed, but decays on its own. The disintegration time depends on the temperature, humidity and type of material where it lies.

According to WHO the current outbreak of COVID-19, has affected over 44,44,670 people and killed more than 3,02,493 people in more than 200 countries throughout the world. In the wake of the Covid 19 outbreak, entire mankind across the globe is suffering. Enhancing the body's natural defense system (immunity) plays an important role in maintaining optimum health. We all know that prevention is better than cure. While there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times. Immunity is the ability of body to protect against all types of foreign bodies likes bacteria, virus, toxic substance, etc. which enter the body.

As it protects us from disease it is also called Disease Resistance. Ministry of AYUSH recommends the following self-care guidelines for preventive health measures and boosting immunity with special reference to respiratory health. These are supported by Ayurvedic literature and scientific publications.

Recommended Measures

I General Measures

1. Drink warm water throughout the day.
2. Daily practice of Yogasana, Pranayama and meditation for at least 30 minutes as advised by Ministry of AYUSH (#YOGAatHome #StayHome #StaySafe)

3. Spices like Haldi (Turmeric), Jeera (Cumin), Dhaniya (Coriander) and Lahsun (Garlic) are recommended in cooking.

II Ayurvedic Immunity Promoting Measures

1. Take Chyavanprash 10gm (1tsf) in the morning. Diabetics should take sugar free Chyavanprash.
2. Drink herbal tea / decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger) and Munakka (Raisin) - once or twice a day. Add jaggery (natural sugar) and / or fresh lemon juice to your taste, if needed.
3. Golden Milk- Half tea spoon Haldi (turmeric) powder in 150 ml hot milk -once or twice a day.

III Simple Ayurvedic Procedures

1. Nasal application - Apply sesame oil / coconut oil or Ghee in both the nostrils (Pratimarsh Nasya) in morning and evening.
2. Oil pulling therapy- Take 1 table spoon sesame or coconut oil in mouth. Do not drink, Swish in the mouth for 2 to 3 minutes and spit it off followed by warm water rinse. This can be done once or twice a day.

IV During dry cough / sore throat

1. Steam inhalation with fresh Pudina (Mint) leaves or Ajwain (Caraway seeds) can be practiced once in a day.
2. Lavang (Clove) powder mixed with natural sugar / honey can be taken 2-3 times a day in case of cough or throat irritation.
3. These measures generally treat normal dry cough and sore throat. However, it is best to consult doctors if these symptoms persist.

Conclusion

- The best way to prevent the transmission of infection is to avoid or limit contact with people who are showing symptoms of COVID-19.
- The next best thing you can boost your immunity & you can do is practice good hygiene and physical distancing to prevent virus from being transmitted.

Name: Miss. Apurva Prakash Patil

College Address: KLE's, B. K. College, Chikodi

Mobile No.: 8867899718

Email id: apoorvapatil2709@gmail.com

Death is a very delicate matter, so delicate that many people consider it to be of poor taste to mention it at all. But it exists and, however unpleasant this idea may be for some people, it is better to look at what you dislike, than to be surprised by it.

Every living being dies in the long run; however, there are a lot of possibilities to postpone death. Most importantly our body resistance to any of the deadly disease can postpone uncertain death.

The death rate caused by the Corona virus — after taking into account both confirmed and unconfirmed cases — was 0.66 per cent, the study found. The death rate from confirmed Covid-19 cases turned out to be 1.38 per cent. Estimates that authorities had made so far put the death rate for confirmed cases between 2% & 8%, and the death rate for overall cases between 0.2% and 1.6%. The study showed how the age of patients was a key factor — nearly 20% of 80+ people who caught the virus needed hospitalization, while for people under 30, it was only about 1%

Another finding of the study is likely to have serious implications for countries with ageing populations. While the mortality rates may have turned out lower compared to early estimates, Covid-19 is still "several times deadlier than previous pandemic viruses, such as H1N1," they said.

The coronavirus pandemic has turned the world's attention to the immune system, the body's defence force against disease-causing bacteria, viruses and other organisms that we touch, ingest and inhale every day. There is currently no vaccine for coronavirus, and we may not see one for 18 months or longer. So, for now, our immune systems must adapt unaided to this potentially deadly threat.

But what is the immune system exactly, and how does it help repel intruders?

Parts of the Immune System

Many cells and organs work together to protect the body. White blood cells, also called leukocytes, play an important role in the immune system.

□ Some types of white blood cells, called phagocytes, chew up invading organisms. One type of phagocyte is the neutrophil which fights against bacteria. When someone

might have bacterial infection, doctors can order a blood test to see if it caused the body to have lots of neutrophils. Other types of phagocytes do their own jobs to make sure that the body responds to invaders.

□ Others called lymphocytes, help the body remember the invaders and destroy them. The two kinds of lymphocytes are 'B lymphocytes' and 'T lymphocytes. Lymphocytes start out in the bone marrow and either stay there and mature into B cells, or go to the thymus gland to mature into T cells. B lymphocytes are like the body's military intelligence system - they find their targets and send defenses to lock onto them. T cells are like the soldiers - they destroy the invaders that the intelligence system finds.

Mechanism of the Immune System

When the body senses foreign substances (called antigens), the immune system works to recognize the antigens and get rid of them.

B lymphocytes are triggered to make antibodies. These specialized proteins lock onto specific antigens. The antibodies stay in a person's body. That way, if the immune system encounters that antigen again, the antibodies are ready to do their job. That's why someone who gets sick with a disease, like chickenpox, usually won't get sick from it again. This is also how immunizations (vaccines) prevent some diseases.

An immunization introduces the body to an antigen in a way that doesn't make someone sick. But it does let the body make antibodies that will protect the person from future attack by the germ.

Although antibodies can recognize an antigen and lock onto it, they can't destroy it without help. That's the job of the T cells. They destroy antigens tagged by antibodies or cells that are infected or somehow changed. (Some T cells are actually called "killer cells.") T cells also help signal other cells (like phagocytes) to do their jobs.

Antibodies also can: -

□ Neutralize toxins (poisonous or damaging substances) produced by different organisms.

□ Activate a group of proteins called complement that is part of the immune system. Complement helps kill bacteria, viruses, or infected cells.

These specialized cells and parts of the immune system offer the body protection against disease. This protection is called Immunity. Humans have three types of immunity viz. Innate immunity, Adaptive immunity, and Passive immunity.

1. Innate immunity: - Everyone is born with innate (or natural) immunity, a type of general protection. For example, the skin acts as a barrier to block germs from entering the body. And the immune system recognizes when some invaders are foreign and could be dangerous.

2. Adaptive immunity: - Adaptive (or active) immunity develops throughout our lives. We develop adaptive immunity when we're exposed to diseases or when we're immunized against them with vaccines.

3. Passive immunity: - Passive immunity is "borrowed" from another source and it lasts for a short time. For example, antibodies in a mother's breast milk give a baby temporary immunity to diseases the mother has been exposed to.

Immunoglobulin

These are immunologically active serum proteins formed in response to an antigen and react specifically with that antigen, which in turn is inactivated, neutralized, destroyed or immobilized.

When an immunoglobulin reacts with an antigen, it is called an Antibody. When it does not react with an antigen, it is simply called immunoglobulin. All antibodies are immunoglobulin, but all immunoglobulin may not be antibodies.

Immunoglobulin is a Glycoprotein, synthesized by Lymphocytes and Plasma cells, found in the serum, body fluids and tissues. They are produced by Vertebrates only. It is 'Y-shaped' or 'T-shaped', made up of 4 polypeptide chains. Of these, two chains are short; they are called Light Chains (L-chains) and are identical. Other two chains are longer; they are called Heavy Chains (H-chains) and are identical.

Each light chain is made up of 214 amino acids and each heavy chain is made up of 450 to 700 amino acids. These four chains are held together by Disulfide bonds (-S-S-) forming a 'Y shaped' molecule. Each chain has a Constant region 'C' and a Variable region 'V'. The V-regions are present at the tip of each arm of the Y molecule, forming an Antigen Binding Site. The rest of the arm forms C-region.

The amino acid sequence in the variable regions varies in different antibodies while it remains the same in the constant region in the different antibodies.

There are five general classes of Immunoglobulin in human serum, viz IgM, IgG, IgA, IgD and IgE. Ig represents immunoglobulin and other letters designate respective class of immunoglobulin.

Death is inevitable for all people; in the end, it is always the same, and the way you die doesn't really matter as long as you are dead. You have no power over it; yet, you have power over how you spend the entire life before it. Hence, we have to take care of ourselves to avoid contagious disease by enhancing/ boosting our immunity by practicing Yoga, and other exercise; consumption of food like turmeric, ginger, garlic, citrus fruits that has antibiotic properties; keeping the body always hydrated, hygienic, etc. all precautions should be taken.

Every part of your body, including your immune system, functions better when protected from environmental assaults and bolstered by healthy-living strategies such as these:

- Don't smoke.
- Eat a diet high in fruits and vegetables.
- Exercise regularly.
- Maintain a healthy weight.
- If you drink alcohol, drink only in moderation.
- Get adequate sleep.
- Take steps to avoid infection, such as washing your hands frequently and cooking meats thoroughly.
- Try to minimize stress.

These help our immune systems to be in the best shape possible to tackle pathogens. But the first line of defense is to prevent infection from entering the body. The World Health Organization (WHO) recommended basic protective measures against COVID-19 are:

- Frequent hand washing with soap and water, or cleaning hands with an alcohol-based rub.
- Maintaining social distancing.
- Avoiding touching your eyes, nose and mouth.
- Covering your nose and mouth with a bent elbow or tissue when you cough or sneeze.

We have to treat the inevitability of death as yet another motivation to try and do as much as possible right now, for we know that the time of our life is limited and, no matter what actually awaits us after death, it would be something entirely different from what we were used to do in life. There is no use thinking about death all the time; but thinking about the limited nature of time is useful. From this perspective, the only thing every person may try to ensure is not to be ashamed of his life.

“To ensure Good Health: Eat lightly, breathe deeply, Live moderately, cultivate cheerfulness, and maintain an interest in Life.” - William London.

Name: Miss. Bhavana C. Patil

College Address: KLE's, Raja Lakhamagouda Science College, Belgavi

Mobile No.: 7353453115

Email id: bhavanap562@gmail.com

Covid-19 is an infectious disease caused by severe acute respiratory syndrome[SARS COV-2] which was first identified in 2019 in Wuhan central china and today became a global wide spread cause around the world. This virus typically spread from one person to another through respiratory droplets producing during coughing, common symptoms include fever, cough and shortness of breath, it also may spread from touching contaminated surfaces and touching one's face and other varying percentage among patients in several studies.

The lungs are the organs most affected by COVID-19 because the virus accesses host cell by enzyme called ACE2 which is most abundant in alveolar cell of the lung as the alveolar disease progress, respiratory failure might develop which leads to death. As this is viral pneumonia, antibiotics are of no use the antiviral drug we have against flu will not work and there is no currently no vaccine. Recovery depends on the strength of the immune system, the elderly and people with underlying medical problems like high blood pressure, heart problems or diabetes or chronic respiratory condition are at a greater risk of the serious illness from Covid-19 because they don't have stronger immune system.

The use of molecular structure of virus scientists have research many things about this virus the viral protein and their interaction with human protein help to find the new approach towards the vaccine .the outer membrane spike glycoprotein known for its glycosylation is the prime host interacting protein with host cell targets. The study of Covid 19 was done by structure of spike glycoprotein and glycan shield pattern that has great implication for understanding the viral camouflage and mode of cell entry and thus assisting the development of new vaccine, antibiotics, small molecular drug and screening of human host target can be found.

Work towards the Progress to Kill Bad Virus [COVID-19]

There is no available vaccine, but research into developing a vaccine has been undertaken by various agencies, the vaccines are still a long way from being available for public use. Still the clinical trials and safety approvals needs to get a

workable vaccine to market could take time. Developing the vaccine is not simple it has to be carefully done and inject into potentially world's population. The national institute of health has been working with biotech companies to develop a vaccine using the genetic sequence of new covid-19 .Even after getting an effective vaccine scientist are facing more new challenges like how that vaccine has to reach everyone around the world this should be fair and equitable access to that vaccine for everybody from present situation it is detected that until and unless each person get vaccinated world will not be safe.

Rate of Spread of Covid-19 all Around the World

Different parts of the country are seeing different levels of COVID-19 Activity the united states nationally is currently in the initiation phases but states where community spread is occurring are in acceleration phase the duration and severity of each phase can vary depending on the characteristics of the virus and public health response.

Ayurveda is playing a Vital Role to Increase the Immunity

Ayurveda is the natural system of medicine that originated in ancient times more than 3000 years ago. The term ayurveda derived from the Sanskrit ayur (life) and veda (science or knowledge) thus the ayurveda stands for the knowledge of life. The ayurveda treatment is based on natural system using the herbal plants we are treating different diseases which can be curable without any side effects. Ayurveda treats patients based on the idea that diseases occur due to an imbalance or stress in a person.

Ayurveda cures healthy lifestyle and natural therapy to heal the patient's diseases. Today is the day to think more depth about ayurveda because we are suffering from one of the most dangerous virus that is covid-19 which has taken the lives of many people across the world and people are afraid for the upcoming days. Till date across the world no country had developed the vaccine and which seems to be very sad news for each and every person who are under attack of covid-19 .Vaccine testing is going on throughout the world but result are yet to come. In this situation India is focusing on ayurveda which include herbal preparations as well as measures for the healthy lifestyle to better cope with this new virus. Ayurveda helps to block virus entries to the body and passage to the lungs. Ayurveda helps to

stimulate immunity. Ayurveda and yoga can boost immunity so the body can fight in case the virus attacks us. The combination of ayurveda and yoga helps to develop good body and immune power.

Most of the countries are giving much importance to the conventional allopathic medicines for prevention and cure of covid-19 but India is focusing on ayurveda which can act as hero to kill Covid -19. The herbal medicines can enhance the body's natural defense system (immunity). In the crises of covid-19 ayurveda can have a positive effect for example use of tamarind and turmeric supplies antioxidants to our body and this can help to reduce lung and breathe problems. Yoga plays very positive response to our body a daily dose of yoga can help in boosting the immunity power. As we know due to covid-19 entire mankind are suffering in this situation. We should know that prevention is better than cure while there is no medicine for covid-19 as now it is good to take preventive measures which boost our immunity in this time that is ayurveda and yoga can play important role in each individual life to enhance the power of immune system.

Name: Miss. Bindu Prakash Parmar

College Address: Dr. A. V. Baliga College of Arts and Science College, Kumta, Uttar
Kannada, Karnataka

Email id: binduparmar222@gmail.com

The covid-19 coronavirus meets its most formidable foe the moment it enters the human body. Due to this virus 1.5 million people got affected and killed more than 100,000 people, is not different from influenza viruses, or even the coronavirus responsible for the common cold, attack the body. Therefore, the immune system has a predictable response. It is the degree to which this response is tolerated by the body that determines mortality rates. The immune system is waiting; ready for action it determines who dies and who survives. It is why the vast majority of infected have recovered from the disease.

Yet one of the most important unknowns is why some people’s immune systems are up to the task of clearing out the virus while others are sluggish or overreact, leading to death as their immune system is weak. Just as vexing

- How do we know for sure if a person is immune to covid-19 infection?
- Will immunity last over time or fade?
- Can a vaccine provide immunity and stop the pandemic?

It’s helpful in thinking through these unanswered questions to understand how the immune system works ,how immunity testing works, and how immunity to similar viruses change over time. It’s also comforting to know that if you get covid-19, your body will try very hard and if it doesn’t than your immunity is weak against coronavirus.

The first thing to know about the immune system is that it is not simple at all. A huge array of cells and chemicals in our body produces work in concert to clear foreign invaders from your body. “There’s lot elegance to this whole system”, “it’s like an orchestra”. All these each with different part to play to defeat the virus.

A viral infection begins when a virus enters a cell of our body. In the case of covid-19, which is transmitted mostly by respiratory drop? A cascade of viral particles enters the body through the nose, eyes or mouth. Breathing carries some of these particles to lower respiratory tract where the spike proteins of coronavirus , acting like a key, lock into epithelial cells that line the respiratory tract as well as

those the air sacs in the lungs . SARS - COV -2 is able to gain entry by unlocking the ACE 2 Protein on the lung cells. Once in, they hijack the cells machinery replicate and multiply and infect adjoining cells.

In case of SARS-COV-2, the virus seems better at penetrating deeper. The inflammation triggers a fluid build-up in the lungs. The fluids also contains the residue of the host specialized cells including T cells the carpet bomb and damage many of the body’s own cells as well as the viral particles. As more sacs are infected, the lungs find harder to perform their core job of extracting oxygen from the air and eventually, this aggravates breathlessness. Depending on the degree of infection in the lungs, the inflammation the patient will require hospitalization to treat breathlessness and ventilator support artificially provide oxygen if the condition worsens.

If the infection in acute it can be lead to depletion of white blood cells making body duly to other secondary infection , which may lead to death. The elderly, especially those with existing conditions such as diabetes and cardiovascular disease they get easily affected by coronavirus. To overcome this WHO has published guidance on adjusting public health and social measures for the next phase of COVID-19 response. Some governments have suggested that the detection of antibodies to the SARS-CoV-2 , the virus that causes COVID-19 ,could serve as the basis for an “ immunity passport” or “ risk free certificate” that would enable individuals to travel or to return to work assuming that they are protected against re-infection.

Due to this pandemic the death rates all over the world are increasing rapidly. As it is the contagious disease so spreads rapidly and still there is no perfect vaccine for this so people are losing their lives. The total number of coronavirus patients in India increased to 151,767. While Maharashtra continued to report high number of cases coronavirus infected more than 55 lakh people across the globe, according to John Hopkins University. The worldwide death toll from COVID-19 infection to 350,456. The fatality rate of covid-19 in Bombay city has been highest at 8.1 % for those under 40 -60 years and less than 1% for those under 40, shows a BMC analysis of 988 deaths. Death rate in India is increasing day by day. But it less compared to other countries in the world even also it should be controlled and to control that people should maintain lockdown rules and they should maintain social distancing and follow the rules and regulations taken by government . If people will follow all rules they can overcome this pandemic called coronavirus.

Name: Mr. Chandan H Patgar

College Address: Dr. A. V. Baliga College of Arts and Science College, Kumta, Uttar
Kannada, Karnataka

Mobile No.: 8861909672

Email id: Chandanhp08@gmail.com

Introduction

Strong immunity is a key weapon in the fight against Covid-19, there are many sources of food that is known as immunity boosters, and the rich sources of vitamins present in our food will boost our immune response towards pathogens and viruses, those who have extreme level of Immunity power they fight towards Covid-19 but those who have less immunity they have to increase the immunity otherwise in this covid-19 it's hard to survive, there are various ways to increase immunity which have scientifically been shown to be very effective , here plants and their product plays vital role to increase immunity which are available naturally

Body

We have to increase our immune system to fight against corona virus as well as normal fever also, So taking good food prepared in home is good for our health rather than eating junk food we must have homemade food and even we have to avoid the foods which were kept in fridge this is harmful for the human being , spending some time in the roof or balcony of the house during the sun it's important to spend in the sun because sunlight works to give energy to the T-Cells, So the T-cells are one of the major components of the adaptive immune system their roles include directly killing the host cells ,host cells are virus cells which commonly enter to our respiratory system and gets transferred to our whole body, if we have good immunity then our body will kill those infected host cells from our strong immune system

Sleeping helps our body in the distribution of immune cells ,during sleep it becomes easy for our immune system to find an infected place and reach the immune cell there, that's why doctors give suggestion to take tablets before sleep these immune cells then work to eliminate those viruses , Taking protein diet for breakfast protein enriched food will provide amino acid to our body, which helps to generate T-cells in our body these T-cells give energy to the cells that enhance our immunity we can have extra supplementary food in home they are turmeric powder,garlic etc which

are having great power to build a good immune system, using these all in our daily diet will increase our immune surely

Exercise boosts our body's immune system and rapidly builds blood cells ,here they build white blood cells in high school we studied that white blood having platelets work to execute the infection that has arrived at the body from external atmosphere , platelets plays vital role in immune system of the body, basically it's a foreign body which comes contact with body and makes human sick so if we had improved our diet by taking vitamins or herbal preparations then we can easily kill that virus without getting any damage to the body,

We should eat fruits, in past decades a growing body has shown that vitamin c important to the health of our immune function when we eat citrus food like lemon and orange it will boost our immunity by giving us proper proteins to fight against germs and virus comes from external source, when one of friends gets fever or cold the next day another guy in same group will get same kind of fever or cold because it attacked the boy who's mechanism and immunity was very low to defend the virus came from his friend, but some of them won't get because their immunity plays a good role as they have good power to fight against being sick, So Covid-19 also plays same role in spreading virus it is basically a retrovirus which attacks the respiratory system of human being then after 14 days we can see the symptoms, But if we have good immune system there is no need to worry because as we know our T-cell will fight against this and we will recover earlier than others only if we had proper diet and protein enriched food, This virus doesn't goes to stomach it reaches our respiratory track through that it enters our blood stream then its time for our immune system to defend this virus

So when it comes to death WHO said that it effects 60+ and below 10 years children's seriously as they can't produce immune power suddenly it will be hard to them to survive so old age people must take care by boosting immune system by naturally available food and proper diet, simple trick is that we should not panic during this situation all we have to do is we must build a good defensive system in our body mentally we have to prepare ourselves that we are going to fight this sick at any cost, Staying happy will release dopamine hormones which are good for the human ,when we do good things and we get happiness that time we will get dopamine hormones those hormones play vital role in producing white blood cells which helps to build a good immune system, So we must be stress free and should enjoy every

movement happily rather than being sad, Doing yoga also helps to become stronger both physically and mentally we will be strong if we do yoga and exercises

Death rate increasing day by day because there is a main reason that is who are living in city they are not getting any sufficient amount of proteins and immunity boosting foods they are lacking naturally available foods which are high in proteins, they choose junk food over protein enriched food so their immune system can't build a proper system as they won't get good amount of chemicals needed to be build, City and urban peoples are taking supplements for building immune system which doesn't last long for few days it shows effect, only thing which stays longer time is naturally available food, As health supplements have side effects and they make worse in some time, so we should avoid artificial supplements ,village side people are getting highly nourished food which gives them good immune power as they can easily fight any fever without getting any tablets during their normal fever

We are doing mistakes day by day by not taking proper food in our meals as well as we are not doing any physical work at least 15mins workout is necessary for a human and around 3000 footsteps to be done daily to be healthy and fit, we are choosing junk foods caffeine containing drinks which effects our health very badly but it gives good tastes although, for taste human are eating wrong thing, Green vegetables to be consumed to prevent illness and to build a good immune system Maximum death happened to those who are not physically fit and not having a good immune system in that old age people came because they can't produce sufficient amount of immune responsible proteins, so at least they can grow their immune to least amount to minimum by following good life style after that they need not be worry for fighting the virus because precaution is better than cure

Conclusion

Man only made this viruses to spread all over world, when an animal dies there is a food chain to eat that animal, but we are killing many organisms for our food so there food chain wont complete, if a snake dies then there will be no more eagles to eat that then that snakes body will start to decompose slowly in open nature at the same time microorganisms will attack that then those microorganism will spread to other organism this causes dangerous viral diseases, if eagle were present then it would not be happened so human are using lot of chemicals in factory which effects animals as well as birds they are dying in large number, In this Covid-19 also

this got started from the animals which were being exposed without completely buried or decomposed these microorganisms attacked those half decayed animal and spreaded the virus from animal to the human being and now we are suffering, So we should take care of our health by increasing our immune system, Only those will lose their life who are not having sufficient amount of immune power its necessary to build a good life style to eradicate this serious issue as a student I’m maintaining a good health and social distancing.

Name: Miss. Christina Edwin

College Address: Pratibha College of Commerce and Computer studies, Pune

Mobile No.: 9075343901

Email id: christwin0000@gmail.com

“A wise man should consider that health is the greatest of human blessings, and learn how by his own thought to derive benefit from his illness.”

Hippocrate

The spread of corona virus has not only caused global economic damages but also has damaged many human lives. During the first week of outbreak in Wuhan, China, report suggested that more than 2500 people were killed. In case of United States, it started with number of deaths by 2 people, and now has reached till 110,173 deaths since last three months after the outbreak, becoming the nation, with highest number of deaths so far.

United States is followed by Brazil and Russia with death count of 34,039 and 5,384 respectively. The worst affected country was Italy, which started their death count by 1 person like all other nations, but rose till 33,689. The worst part was, nearly 1000 people were dying per day within one month of the outbreak.

While coming to our country, India started with the death count by 1 person on 17th March 2020, and rose up to 6,363 deaths within three month, becoming 7th country with highest number of corona virus infection and deaths.

Looking at the global scenario, nearly 6,702,835 are total infected cases, amongst which 3,057,235 are active infected cases, while 393,224 are dead so far.

Research for vaccine is going in almost all the countries, yet it is not being found. The spread of infection and deaths due to it is rising every passing day. Governments of all the countries, worldwide, are taking essential preventive measures to stop the infection from spreading. Continuous research and vigorous efforts are made to stop the virus permanently.

Now, let's discuss how this virus spreads?

The very common mean for this virus to spread is through droplets. Like for example, if an infected person, let's name him 'A', sneezes in front of a non-infected person, let's name him 'B', provided that B is at the distance of 1-2 feet from the A,

the droplets that are released by A in air will be definitely inhaled by B. These droplets contain virus, which will travel from nasal cavity of B till his lungs and will start replicating, making B an infected person, now. Problem does not end here. A and B will go to C and D making them infected person as well. Now, A, B, C and D will pass this infection to more four persons and again these eight will go to more eight people, like this the infection continues to spread.

That’s why when there was outbreak of this virus the very first preventive measure taken by people were wearing mask, whether or not they are infected, to avoid inhalation of viral air.

Other common mean can be through touch. When a non-infected person touches an infected person’s sneezed droplets by any means and uses the same hand to wipe his face, especially his eyes or nasal area, he can be infected person and carrier of the virus who is capable of spreading the virus.

Hence when there was outbreak of corona virus, government issued the order of social distancing and wearing gloves as an attempt to prevent the spread of virus.

Now, how does this virus damage our immune system?

Our immune system is made up of cells. Our cells contain, proteins, DNA which is in nucleus, acidic enzymes such as Lysosomes, Ribosomes, Cytoplasm, and etcetera. To understand how corona virus affects our body cells, we first need to know some characteristics of this virus.

Covid-19 is a positive single standard RNA virus. Its genetic material is RNA not DNA. Since it’s a positive RNA virus, it has the ability to directly make its protein. It also has the ability to make hundreds and thousands of RNA with a single RNA. Since it has the ability to make its own protein and RNA, through both of it, it can form a new virus or you can say it can replicate itself. The worst part is, it works faster than other viruses and changes or modifies itself time to time. That’s why, the corona virus found in India is different from the virus found in China or United States. Some reports suggested that, till now this virus has made 30 to 40 modified versions of itself.

Coming to our main topic, how this virus affects our immune system?

Let us understand this step by step.

Step-1: Our cells have receptors called ACE-2 or Angiotensin-Converting Enzyme 2, which helps our body to regulate the blood pressure. Now, this corona virus binds itself with these ACE-2 receptors in order to enter into the cell. One note I would like to give you here is that, these ACE-2 receptors does not allow any foreign body form to bind with them, but corona virus has ability to change itself, remember? It modifies itself in such a way that ACE-2 receptor allows it to bind with itself.

Step-2: Once it binds itself with ACE-2 receptors, the virus now enters into the cell. The cell covers itself up, back to its shape once the virus enters into it.

Step-3: Now the virus has to separate its RNA from its body in order to make a new virus. To separate its RNA, the virus fuses with the acidic enzyme of human cell called Lysosomes. Once the virus fuses with Lysosome, its RNA gets separated from its body and enters as free body into cytoplasm of our cell.

Step-4: Once the RNA enters into cytoplasm of our cell, it uses our cell's organic granule called Ribosomes. With the use of ribosome, it makes protein. Corona virus has a content called “Protease”, which kills our cell's protein. The proteins which are killed by protease are those proteins which help our immunity cells to fight and defend harmful viruses and bacteria. Then it uses “RNA Dependent RNA Polymerase”, to create more RNAs.

Step-5: Once it creates proteins and RNAs, it starts to form new corona bodies with use of them. This is called “Viral Reproduction”, as the virus replicates itself. Once new corona viruses are formed, it breaks the host cell, that is, our immune cell, and starts affecting other immune cells with the same procedure as the parent virus.

Now, how can this virus stopped?

Clearly there are no vaccine/ Anti dots yet for destroying theses harmful bodies. But boosting our immunity system can definitely help. Boosting immunity system helps us to avoid viral infections. And in case you are attacked by viral infection, you can recover fast. It is well said that, “prevention is better than cure.” The only way to stop the virus is to prevent it.

How can we boost our immunity system?

Please note here one thing clearly that there are no such supplements or medicines that can help us to boost our immune power. The only ways to boost our immune power is through natural diet and disciplined lifestyle.

Food diet such as fruits, green and root vegetables (for example: carrots, spinaches etc), ginger, cloves, garlic etcetera are all considered as natural immunity boosters. Turmeric is not only an excellent immunity booster but also an antibiotic. Vitamin-C is a most essential source for boosting the immunity. Therefore, having Vitamin-C enrich food can definitely help.

Frequently drinking hot fluids and taking hot water steam can help our throat and nasal cavity to be free, reducing the chances of being infected.

Regarding lifestyle, a bit of exercise like walk for 30 minutes, adequate amount of good sleep, proper timing of eating can aid in boosting our immunity. If possible yoga and meditation can be an excellent habit for maintaining strong immunity, since it releases anxiety; the most powerful killer. Anxiety leads to many problems like high blood pressure, high sugar, resulting into weak immunity system. Meditation soothes anxiety.

Last but not the least, maintaining hygiene. The most vital habit during the time of outbreak of such viruses, is maintaining proper hygiene. Washing our hands time to time and taking shower after coming from outside can be an effective attempt to avoid the virus. Also try to avoid touching your hands to your eyes and nose when you are outside. If you want to do so, use alcohol based sanitizers, before. When you go outside, make sure you use mask and gloves, mandatorily. If we already have habit of maintaining hygiene, passing the times of viral infection won't be difficult for us.

In conclusion I would only like to say a quote by one of our great leader, Mahatma Gandhi Ji , who once said, “It is health that is real wealth and not pieces of gold and silver.”

Name: Miss. Ankitha

College Address: Veerashaiva College, Shivmogga

Mobile No.: 9075343901

Email id: chinthaankitha3@gmail.com

Immunity

Covid-19 or Coronavirus was declared as a global pandemic by the World Health Organization. And while the countries are trapping with imminent dangers that this virus poses to humanity, there are few key measures that individuals can take to fight this pandemic. While it is Crucial to mention hygiene standards like washing your hand frequently especially if you have travelled by public transport. Using an alcohol Sanitizer, in case you are travelling to disinfect your hands, wearing a Mask and avoiding touching your hands or mouth. There are also certain Methods to improve your immunity which is paramount at this juncture.

Improve Your Diet

The food we eat plays a key aspect in determining your overall health and immunity. Eat low carb diets, as this will help control high blood sugar and pressure. A low carb diet will help slowly down diabetes and Focus on a protein rich diet to keep you in good shape. And regularly Consume vegetables and fruits rich in Beta carotene, Ascorbic acid and other essential vitamins. Probiotics like Yoghurt, Yakult and fermented food are also excellent sources to rejuvenate the composition of gut bacteria, which is important for nutrient absorption by the body. These are good options for the older generation too.

Don't compromise on Sleep

Good snooze time for 7-8 hours is the best way to help your body build Immunity; lesser sleep will learn you tired and impair your brain activity. The lack of sleep will prevent the body from resting and this will impair other bodily functions that will have a direct impact on your immunity.

Stay Hydrated

Drink up to 8-10 glasses of water every day, to stay hydrated. Hydration will help flush out the toxins from the body and lower the chances of flu. Other alternative include juices made of citrus fruits and coconut water to beat the heat .

Don't skip on Exercise

A good diet should be followed by an exercise routine. Remember to exercise regularly; even light exercise will go a long way in releasing the toxins from your body. It is recommended to exercise for 30 to 45 minutes, depending on your stamina. If you have not started exercising yet, then it is good time to start. These are several YouTube channels and apps to help you exercise at home. Regular exercise improve metabolism, which has a direct correlation with body immunity.

Practice meditation

Too much stress releases the hormone known as cortisol, which impairs Your response to immediate surroundings and makes your body Susceptible to infections; you are left felling constantly anxious. The best way to relive stress is through meditation, it is a tried and tested activity to calm the nerves. If you need help meditating, then instructional resources to help you meditate.

- Drink warm water throughout the day.
- Practice meditation, yoga pranayama.
- Increase the intake of Turmeric, Cumin.

Deaths

- Even as a sudden spike in coronavirus cases threatens to ruin every plan India has made a new study has come up with new insights for countries stricken by mass hysteria.
- According to the study published in The Lancet infectious Diseases Journal a couple of days ago, the death rate for Covid-19 could be significantly lower that what was previously thought.
- The new study done by British researcher was carried out on people who caught the infection and got cured without showing severe symptoms or getting tested. It was based on findings from new comprehensive analyses of coronavirus cases in mainland China.

- The death rate caused by the virus –after taking into account both Confirmed and unconfirmed cases – was 0.66 per cent, the study found. The death rate from confirmed Covid-19 cases turned out to be 1.38 percent.

Name: Miss. Deeba Rana

College Address: Shaheen Women's Degree College Bidar

Mobile No.: 8105218158

Email id: ghufranhms@gmail.com

Coronavirus disease (covid-19) is an infectious disease caused by a newly discovered coronavirus. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infectious person cough, sneezes or exhale. These droplets are too heavy to hang in the air and quickly fall on surface. Pneumonia of unknown cause detected in Wuhan, china was first reported to the WHO country office in china on 31 Dec 2019. The outbreak was declared a public health emergency of international concern on 30 Jan 2020. On 11 Feb 2020, WHO announced a name for new coronavirus disease as COVID-19.

The ability of an organism to resist a particular infection by action of specific antibodies white blood cells is called as IMMUNITY. The development of immunity to a pathogen through natural infection is a multi-step process that typically takes place over 1-2 weeks. The body responds to a viral infection immediately with a non-specific innate response in which macrophages, neutrophils and dendritic cells slow the progress of virus and may even prevent it from causing symptoms, if the response is strong enough, may prevent progression to severe illness or re-infection by the same virus. This process is often measured by the presence of anti-bodies in blood. There are two types of immunity, Active and passive immunity. Active immunity provided by antibodies with antigens. During infection, antibodies are produced against the pathogen, this induces immune response and antibodies are produced in the body. It takes time to form and few in numbers. Passive immunity provided to an individual by antibodies obtained from an immunized cell. Passive immunity may be natural or artificial. They are already prepared antibodies and are many in numbers it gives short-lived immunity.

The nutrients that seem to relate to immunity include vitamins A, C, D and E and the minerals zinc, selenium, magnesium. There are no special diets or particular foods that will directly boost your immune system. Your immune system and body can't function at their best without the basic building blocks they need to work properly. An anti-oxidants rich food includes vitamin A, Beta-carotene, vitamin C and vitamin E. A healthy diet and adequate nutrition, there are healthy activities that can

re-enforce your immune health too. Solo exercises includes jogging, jumping rope and a variety of workout at home from yoga, some prefer gardening which can also be great exercise.

The COVID-19 pandemic in India is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19). As of 1 June 2020, the Ministry of Health and Family Welfare have confirmed a total of 190,535 cases, 91,819 recoveries (including 1 migration) and 5,394 deaths in the country. India currently has the largest number of confirmed cases in Asia with number of cases breaching the 100,000 mark on 19 May 2020. India's case fatality rate is relatively lower at 3.09%, against the global 6.63% as of 20 May 2020. Six cities account for around half of all reported cases in the country – Mumbai, Delhi, Ahmedabad, Chennai, Pune and Kolkata. As of 24 May 2020, Lakshadweep is the only region which have not reported a case.

On 22 March 2020, India observed a 14-hour voluntary public curfew at the instance of the Prime Minister Narendra Modi. The government followed it up with lockdowns in 75 districts where COVID-19 cases had occurred as well as all major cities. Further, on 24 March, the Prime Minister ordered a nationwide lockdown for 21 days, affecting the entire 1.3 billion population of India. On 14 April, the prime minister extended the ongoing nationwide lockdown till 3 May. On 1 May, lockdown across the country was further extended by two more weeks till 17 May. On 17 May, NDMA further extended the nationwide lockdown till 31 May. Dr V Ravi, Head of Neurovirology, National Institute of Mental Health and Neurosciences, said that up to 50 percent people in India would be infected by COVID-19 by the year-end if further relaxations are introduced to lockdown rules after May 31.

India currently has the fourth largest number of confirmed cases in Asia. India's cases are mortality rate is lower at 3.09%, against the global 6.63% as of 31 may 2020. Government of India is taking all necessary steps to ensure that we are prepared well to face the challenge and threat posed by the growing pandemic of COVID-19 coronavirus. The most important factor in preventing the spread of the virus locally is to empower the citizens with the right information and taking precautions as per advisories being issued by ministry of health and family welfare.

Name: Miss. Deepanshi Rathore

College Address: IAMR , CCS University, Meerut, Uttar Pradesh

Email id: deepanshi.rathore1996@gmail.com

“Every human being is called to solidarity in a world battling life and death. " The progressing emergency has changed the world texture, and no nation is sufficiently fit to handle this by itself. COVID-19 has put our medicinal services and wellbeing systems, and furthermore countries, together to see the war against the shared adversary. Individuals everywhere throughout the world are attempting to do their part, remembering that if doing so brings even a slight bit positive change on the planet situation. At that point, why not? This at the same time approves a platitude by Alexander the Great - “Upon the conduct of each depends the fate of all."

The pandemic has drawn out the most exceedingly terrible in a couple and best in most of mankind. Individuals are impressively venturing up the stepping stool of mankind, deserting the separation dependent on religion, class, position, and nationality. Richard M. Rorty has appropriately stated, " Solidarity is not discovered by re-flection but Created." The term 'social-removing' has amusingly carried huge numbers of us closer to one another, not truly yet being genuinely accessible, a significant uncommon sight in opposition to when we were all occupied in incredible commotions. We presently keep an eye on neighbors and offer to get fundamental supplies for them and help the old. We have begun finishing our calls and messages by saying "Remain Safe", "Remain Well", "Deal with yourself", which presently feels considerably more important than the standard thing "fare thee well". People are finding bright approaches to convey and help one another while keeping up the truly necessary 'physical-separation'.

Coming out of our overhangs, messing around, singing melodies or lighting candles for the forefront laborers are a portion of the unpredictable approaches to elevate the spirit of the general public. The people group has never felt progressively significant. Article Topic: The present emergency is indicating the best and the most noticeably awful of mankind. Will another type of solidarity develop toward the finish of the passage or do you think on the opposite that past patterns of the most recent couple of years (for example expanding patriotisms) will be upgraded? Rather than worldwide withdrawal and personal responsibility, we can see overflowing help and solidarity. What is increasingly obvious, is the way that this help isn't just constrained

to the limits of a country. For example, the recordings made by the individuals of Italy to caution different nations, asking them not to treat this pandemic with complete disdain, was out of authentic concern.

Further discussing the countries joined together, every nation is ready and attempting its best to confront this inescapable circumstance. Everybody, paying little heed to the nation's size is contributing. While France and Germany gave clinical hardware, China sent its clinical group to Italy; one of the most noticeably terrible influenced. Czech Republic gave defensive suits to Spain and Italy regardless of experiencing a great deal themselves. India likewise chose to help the world by permitting the fare of hydroxychloroquine (HCQ), regardless of being in the line of sight of a disaster itself. The United States has declared \$174 million monetary help to 64 nations, including \$2.9 million to India, to help the last battle this emergency. This help not just came as money related gifts or fundamental clinical hardware, for example, covers or ventilators. Luxembourg has gone to the degree of taking in serious consideration patients from France and rewarding them.

The post-pandemic stage will see the unfurling of another human race; the belief systems of the individuals will differ from what it was before this pandemic occurred. Individuals are currently prepared to make forfeits on an individual level for the advancement of society. There is promising finish to the present course of action. The light toward the finish of this lethal one is the development of new solidarity. Each country needs to chomp this shot and keep mankind and world solidarity above patriotism. I accept the remainder of the world will follow the case of those nations that have magnanimously helped out this fight. Their case will make us propel ourselves much further, and soon, we will notice this new world, sparkling more than ever!

Name: Miss. Divyarani Chavgonda Patil

College Address: Smt. Kasturbai Walchand College, Sangli

Mobile No.: 7378876487

Email id: divyapatil1104@gmail.com

Someone has correctly said that, “If health is gone, everything is gone”. Health is wealth and nothing is supreme than what our health stands at the present moment. A healthy person (whether rich or poor) lives more happy and peaceful life than any rich person having a diseased body.

Nowadays, a new respiratory disease called COVID – 19 is spreading across the world. COVID – 19 or Corona virus was declared as a global pandemic by WHO (World Health Organization)

The development of immunity to a pathogen through natural infection is a multi-step process that typically takes place over 1-2 weeks. When our body encounters viruses activates the immune system, which provides non-specific defenses. This is usually in the form of neutrophils, macrophages and mast cells. After the step of preliminary elimination, the body mobilizes the adaptive immune systems, which consist of components that can initiate an immune response.

The COVID – 19 enters the human body through respiratory droplets. Each virus has four major components: S (Spike), M (Membrane), E (Envelope) and N (Nucleocapsid). The body response to a viral infection immediately with a non-specific innate response in which macrophages, neutrophils and dendritic cells slow the progress of virus and may even prevent it from causing symptoms. This non-specific response is followed by an adaptive response where the body makes antibodies that specifically bind to virus. These antibodies are proteins called immunoglobulin. The body also makes T-Cells that recognize and eliminate other cells infected with the virus. This is called cellular immunity.

It matters for obvious personal health reasons and whether you will get COVID – 19 multiple times and how often. Immunity will also affect how deadly the virus is. If people retain some even imperfect protection then it will make the disease less dangerous. You need the adaptive immune response, This includes cells that produce targeted antibodies that can stick to the virus in order to stop it and T Cells that can attack just the cells infected with the virus called Cellular response. It takes

around 10 days to start making antibodies that can target the COVID – 19 and sickest patients develop the strongest immune response.

COVID – 19 persisting all over the world, having a strong immune system is more important than ever. That’s because your immune system defends you against harmful COVID – 19. Yet, the science is clear there’s no special diet or other life style modification other than social distancing and proper hygiene practices that can prevent you from Corona Virus infection. However it is believed that keeping your immune system healthy can help reduce your risk of infections of COVID – 19.

Adopting healthier habits such as consuming nutritious foods, getting enough exercise – that strengthen your immune system is one of the best things. Your family can do to stay safe during the pandemic. As well as, it is crucial to mention hygiene standards like washing your hands frequently, especially if you have travelled by public transport , using an alcohol sanitizer, wearing mask (cover your nose and mouth) and avoiding touching your hand or mouth. There are also certain methods to improve your immunity.

Individuals in certain pre-existing illness like diabetes, hypertension, cardiovascular disease and respiratory issue are at higher risk of COVID -19 complications, if also aggravates with age as general immunity reduce as you get older. In the younger generation with no underlying illness, COVID – 19 can result in a minor infection, provided you have robust immunity and do not engage in activities like smoking or vaping. Here is a list of measures you can undertake to improve your immunity.

Improve your diet:

The food you eat plays a key aspect in determining your overall health and immunity. Certain foods like mushrooms, tomato, bell paper, green vegetables, turmeric, Ginger are also good option to build our immunity.

Be Physically active:

For build our immunity, a healthy adult needs at least 2 hours and 30 minutes physical activity every week. Regular exercise improves metabolism which has a direct correction with body immunity.

Stay Hydrated:

Drink up to 8-10 glasses of water every day to stay hydrated. Hydration will help flush out the toxins from the body and lower the chances of virus.

Supplements and immunity boosting foods:

If you are concerned whether you are getting the right amount of nutrients from your diet, consult with our doctor about a supplementation regimen to boost your immune system. There are few common supplements and super foods that can help, they are, vitamin C, vitamin D. While, all the above mentioned tips will definitely help, the need of the hour is a quick boost to your immunity system to keep it fighting fit.

Death

After all that, death occurred by common symptoms like fever, cough and difficulty breathing. Some people can develop a more severe illness. People most at risk of this include older adults and people with severe chronic medical condition like heart, lung or kidney diseases.

Once the COVID -19 reaches the lungs, it cause inflammation which result in fluid accumulating in lung and difficulty breathing. This fluid fills the lungs are sacs then blood oxygen level fall below normal, a condition known as pneumonia.

Once COVID - 19 gets inside the cells it's going to start to replicate and multiply and divide and create copies of itself and then because it infected that one cell of ours, essentially gets destroyed and bursts open, when that cell bursts, it release hundreds of few viruses particles that can go on to infect more and more cells. An overactive immune system that responds in an extreme way to the virus can cause “massive damage” in the body whereas one that's too weak cannot fight it off either. In this, lung loses pulmonary function and becomes injured. This event has also affects blood pressure. In severe cases this can affect multiple organs and lead to death.

The elderly and those with co-morbidities continue to be most vulnerable to COVID – 19 infection as over 50 % of total fatalities are among people above 60 years of age whereas 73% of those who died has underlying co-morbidities like diabetes, heart disorders and chronic kidney ailments, the latest health ministry analysis of death showed. As per updated guidelines issued by government the Health

department records only those cases where the primary cause of death is found to be COVID – 19.

Nowadays, India’s COVID – 19 case deaths rate (fatality rate, CFR) has always remained low. But data from some European and Asian countries show that since the 10th week of 2020, “excess deaths” have surged. In countries with relatively poorer income level such as Indonesia and Ecuador, a very small percent of those excess deaths have been attributed to COVID - 19. With historically poor registration of deaths and medically certified death rate, is India too undercounting its dead? The weekly excess death in 24 countries in Europe from January 1, 2016 to May 15, 2020. In 2020, deaths increased exponentially from the 12th week due to the COVID – 19 pandemic. The spike recorded in the first 10-12 weeks of 2017, 2018 and 2019 can be attributed to the flu season which was unusually lethal. In 2020 the flu season was relatively less deadly.

After all the percentage share of COVID – 19 related deaths in high income countries, the share of COVID – 19 deaths are higher among the excess deaths. In upper middle income countries such as Russia, Turkey and Ecuador and lower middle income countries such Indonesia, the share of COVID – 19 deaths was much lower. This suggests that, the relatively poorer countries may not be testing the dead for COVID – 19 or they may undercount them due to comorbidities. India is one among such countries which do not maintain real time date on all deaths.

The country now stands at 2,66,598. There are 1,29,917 active cases and 1,29,215 people have been cured (discharged). The death toll has reached 7,466. And in worldwide, there are 7,113,366 cases, cured cases are 3,292,704 and death toll has 4f,06,413.

So there are number of different routes by which a person can become infected with COVID – 19. As there is no specific treatment for disease cause by a noval Corona Virus. People should understand basic information about COVID – 19 virus disease. Be aware of fake information that may circulate by online.

We all must follow the lockdown rules. All our wishes will really work. Stay Home, Stay Safe.

Name: Mr. Dnyanadev Huddar

College Address: B.K. College, Chikodi

Mobile No.: 7353896691

Email id: dnyanadevH06@gmail.com

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. As WHO, scientists told COVID-19 is a combination of two viruses.

WHO has published guidance on adjusting public health and social measures for the next phase of the COVID-19 response.¹ Some governments have suggested that the detection of antibodies to the SARS-CoV-2, the virus that causes COVID-19, could serve as the basis for an “immunity passport” or “risk-free certificate” that would enable individuals to travel or to return to work assuming that they are protected against re-infection. There is currently no evidence that people who have recovered from COVID-19 and have antibodies are protected from a second infection.

The measurement of antibodies specific to COVID-19

The development of immunity to a pathogen through natural infection is a multi-step process that typically takes place over 1-2 weeks. The body responds to a viral infection immediately with a non-specific innate response in which macrophages, neutrophils, and dendritic cells slow the progress of virus and may even prevent it from causing symptoms. This non-specific response is followed by an adaptive response where the body makes antibodies that specifically bind to the virus. These antibodies are proteins called immunoglobulin. The body also makes T-cells that recognize and eliminate other cells infected with the virus. This is called cellular immunity. This combined adaptive response may clear the virus from the body, and if the response is strong enough, may prevent progression to severe illness or re-infection by the same virus. This process is often measured by the presence of antibodies in blood.

WHO continues to review the evidence on antibody responses to SARS-CoV-2 infection.²⁻¹⁷ Most of these studies show that people who have recovered from infection have antibodies to the virus. However, some of these people have very low

levels of neutralizing antibodies in their blood,⁴ suggesting that cellular immunity may also be critical for recovery. As of 24 April 2020, no study has evaluated whether the presence of antibodies to SARS-CoV-2 confers immunity to subsequent infection by this virus in humans.

Laboratory tests that detect antibodies to SARS-CoV-2 in people, including rapid immunodiagnostic tests, need further validation to determine their accuracy and reliability. Inaccurate immunodiagnostic tests may falsely categorize people in two ways. The first is that they may falsely label people who have been infected as negative, and the second is that people who have not been infected are falsely labelled as positive. Both errors have serious consequences and will affect control efforts. These tests also need to accurately distinguish between past infections from SARS-CoV-2 and those caused by the known set of six human coronaviruses. Four of these viruses cause the common cold and circulate widely. The remaining two are the viruses that cause Middle East Respiratory Syndrome and Severe Acute Respiratory Syndrome. People infected by any one of these viruses may produce antibodies that cross-react with antibodies produced in response to infection with SARS-CoV-2.

Many countries are now testing for SARS-CoV-2 antibodies at the population level or in specific groups, such as health workers, close contacts of known cases, or within households.²¹ WHO supports these studies, as they are critical for understanding the extent of – and risk factors associated with – infection. These studies will provide data on the percentage of people with detectable COVID-19 antibodies, but most are not designed to determine whether those people are immune to secondary infections.

Other considerations

At this point in the pandemic, there is not enough evidence about the effectiveness of antibody-mediated immunity to guarantee the accuracy of an “immunity passport” or “risk-free certificate.” People who assume that they are immune to a second infection because they have received a positive test result may ignore public health advice. The use of such certificates may therefore increase the risks of continued transmission. As new evidence becomes available, WHO will update this scientific brief?

Name: Mr. Sourabh D. Shinde

College Address: B.K. College, Chikodi

Mobile No.: 7204844730

Email id: sourabhashinde25@gmail.com

INTRODUCTION

Covid-19 is a hotly debated topic that often divides opinion. The following essay takes a look at how immunity and deaths are related in the case of The Pandemic Covid - 19 and some important topics like

- 1) What is Plasma Therapy and how does it work to treat the coronavirus?
- 2) How does the immune system respond to a coronavirus attack?
- 3) Air Pollution lowers Immunity, Increasing risk of death from coronavirus:

By Experts.

- 4) What is Herd Immunity and How can we achieve it with covid –19 ?
- 5) Immunity Passport in the Context of Covid -19.

All we know that the virus is attack on immune system of man and which ones immune system is weak is too much affected cause cough, fever like symptoms and even death also. By this we can see those children, old people and even some youth having weak immune system will affect by the coronavirus.

WHAT IS PLASMA THERAPY AND HOW DOES IT WORK TO TREAT THE CORONAVIRUS:-

By taking advantage of good immune system of recovered patients of coronavirus, many scientific articles and government officials have been focused on drugs such as hydroxychloroquine and remdisiver, but little attention has been directed towards a less glamorous form of treatment: Convalescent Plasma Therapy. Although it's an old tool introduced to science in the 19th century, it's still considered experimental during the coronavirus pandemic as the U.S Food and Drug Administration says there is no approved treatment for covid 19.

According to the FDA Convalescent Plasma is the liquid part of blood collected from patients who have recovered from covid 19. These patients develop antibodies, protein that might help fight the infection. Plasma from survivors gives patients an immediate injection of virus fighting antibodies so they don't have to wait

for their own immune system to kick in. Some experts argue the disease is too advanced in critically ill patients for the treatment to work.

HOW DOES THE IMMUNE SYSTEM RESPOND TO A CORONAVIRUS ATTACK:-

A cascade of viral particles enters the body through the nose, eyes or mouth. Breathing carries some of these particles to the lower respiratory tract where the spike proteins of the coronavirus, acting like a key, lock into epithelial cells that line the respiratory tract as well as those in the airsacs in the lungs. SARS-CoV-2 is able to stay undetected longer than many coronaviruses and its spike protein is able to gain entry by unlocking the ACE2 protein on the lung cells. Once in the hijack the cells machinery, replicate and multiply infect adjoining cells. Like the defining ACE2 proteins on the epithelial cells, viruses too have a tell-tale signature on their surface called antigens and spotting these what kicks the Immune system into action by producing antibodies. The signals they generate trigger another class of chemicals cytokines and chemokine and they alert the immune system to send an array of different kinds of cells that specialize in destroying viral particles.

AIR POLLUTION LOWERS IMMUNITY, INCREASING RISK OF DEATH FROM CORONAVIRUS: BY EXPERTS:--

Dr.Yellapa Reddy, The Governing Council member of the foundation for Ecological security of India, explained that the immune system fights off the disease in our body and air pollution hampers that very immune system. Reddy says that the people with a weaker immune system not only catch disease easily, but that it is also difficult for them to fight against life threatening ailments.

The Fit India Report 2020 out that 20.8% of the total people that were surveyed fell sick more than three times a year, indicating low immunity levels Bengaluru had 22% of people who fell sick more than three times a year.

“Major deaths from the Covid- 19 also are majorly taking place in India’s metro cities where people suffer from weak immune system due to high pollution level; confirming that air pollution increase the risk of covid- 19 deaths.

WHAT IS HERD IMMUNITY AND HOW CAN WE ACHIEVE IT WITH COVID-19:-

When most of a population is immune to an infectious disease, this provides indirect protection to those who are not immune to the disease. For Example, if 80% of a population is immune to a virus, four out of every five people who encounter someone with the disease won't get sick. In this way the spread of infectious diseases is kept under control. As with any other infection there are two ways to achieve herd immunity: A large proportion of the population either gets a protective vaccine. Based on early estimates of this virus's infectiousness. We will likely need at least 70% of population to be immune to have herd protection.

In the worst case (for example, if we do not perform physical distancing or enact other measures to slow the spread of covid 19) the virus can infect this many people in a matter of a few months. This would overwhelm our hospitals and lead to high death rates. In the best case ,we maintain current levels of infection until a vaccine becomes available. This will take concerted effort on the part of the entire population.

The most likely case is somewhere in the middle, where infection rates rise and fall over time, we may relax social distancing measures when number of infections fall. Prolonged effort will be required to prevent major outbreaks and explosive spread.

“IMMUNITY PASSPORT” IN THE CONTEXT OF COVID -19:-

WHO has published guidance on adjusting public health and social measures for the next phase of the Covid 19 response some governments have suggested that the detection of antibodies to the SARS-CoV-2, the virus that causes covid 19 could serve as the basis for an “immunity passport” or “risk free certificate” that would enable individuals to travel or to return to work assuming that they are protected against reinfection.

CONCLUSION:--

So we can now conclude that covid-19 badly affects low immune system people so that we must fight together by unity against this Pandemic situation is necessary by following instructions of government and health ministry.

OPINION:--

In my own view of matter I just said all the things I heard and collected by many sources. We must do awareness about the Covid 19 in citizens and provide hospitality and not seeing upon fake rumors around us. Lastly I just say that be aware about all things and stay safe.

TO Much Fear about the Covid-19:- I just tell some fact that the people fear too much about this. I observed that all are wearing mask at the time of driving but not helmet. The total number of deaths per year by accident is more than 1.5 lakh in India and The Coronavirus pandemic till not completed 10 thousands deaths in 6 months. So don't fears too much just follow social distancing, wear mask and hygiene yourself.

Name: Miss. Bhavyashri R Patil

College Address: R L Science Institute, Belagavi

Mobile No.: 73489 61106

Email id: patilbhavya27@gmail.com

The father of our nation, Mahatma Gandhi, has rightly said that “IT IS HEALTH THAT IS THE REAL WEALTH AND NOT PIECES OF GOLD AND SILVER” and the novel coronavirus which is also popularly referred to as covid-19 has made this statement most evident than it has ever made before. The outbreak of the novel coronavirus disease 2019 (COVID-19) has created a global crisis not only by claiming millions of lives but also by impacting deeply the way we perceive our everyday life and finding a solution to this global pandemic has never been as crucial as it is now. So it is highly imperative to study the host-pathogen interaction, host-immune responses and the pathogen immune evasion strategy that provide us insights into the cause, effect and cure for the disease.

We have to note that not everyone infected by this disease end up dead for some COVID-19 patients, the body’s immune response may be as destructive as the virus that causes the disease. The current virulent disease is distinctive not just because it is caused by a new virus that puts everybody at risk, but also because the range of innate immune responses is diverse and capricious. In some it is powerful enough to kill. In others it is relatively mild. So, it is highly necessary to be aware that it is the immune response of an individual which plays a key role in the survival or the mortality of the masses. Immunity plays a major role in day to day functionalities of a human and animal body. According to the definitions from the oxford dictionary “immunity is the ability of an organism to resist a particular infection or toxin by the action of specific antibodies or sensitized white blood cells”. To simply put, it is the defence mechanism exhibited by an organism to avoid susceptibility to something unwelcomed or harmful. When a group of viral particles enters the body through nose, mouth or eyes the spike protein of the corona virus attaches itself to the epithelial cells of the respiratory tract as well as in the air sacs of the lungs. Once they enter the host, they take control of the cell’s machinery, replicate, proliferate and infect the adjoining cells.

A coronavirus is enclosed by a fatty envelope. The corona /crown of spikes made of protein are there on this envelope. Similarly, an enzyme called ACE2 is

present on the surface of the human cells. The spike protein of the virus enchains to the ACE2 present on the human cells that acts as a receptor. It then combines with the cell surface and releases its RNA (genetic material) into the cell. Once the virus enters inside, it replicates itself with the help of cell's molecular mechanism. Eventually, once the antigens (a toxin or other foreign substance like a pathogen which induces an immune response in the body especially in the form of production of antibodies) produced by the virus are detected by the cells, the immune system encourages itself to produce the antibodies (An antibody is a large, Y-shaped protein produced mainly by plasma cells that is used by the immune system to neutralize pathogens such as pathogenic bacteria and viruses) and this where the whole game of life and death begins.

Apparently when the immune system starts working against the antigens, they send signals to generate a class of chemicals namely cytokines and chemokines. These chemicals, especially cytokines alert the immune system to send an array of different kinds of cells that specialises in destroying the viral particles. However, these cytokines and chemokines elicit inflammation in the cells and massive levels of cytokines can cause extensive lung damage and lead to a condition called acute respiratory distress syndrome (ARDS). However, if this inflammatory response is not managed appropriately, very dangerous consequences may follow by which a situation like 'cytokine storm' can be triggered.

Signaling proteins called cytokines are released at local high concentrations by the cells whenever there is an immune response and whenever there is uncontrolled or dysregulated immune reaction characterized by the overproduction of the immune cells or cytokines themselves is when a syndrome usually called as a cytokine storm syndrome or simply as CSS occurs. This severe immune reaction, making way to the secretion of excessive cytokines in the bloodstream, can be injurious since an excess of immune cells/ cytokines can attack healthy tissue as well.

The damage to the surrounding cells can be catastrophic, leading to sepsis and can be potentially lethal. Cytokine storms are not limited or exclusive to coronavirus patients; it is an immune response which is commonly observed during other infectious as well as non-infectious diseases too. Cytokine Storm Syndrome is viewed as a probable major cause of mortality in both Spanish Flu that occurred during 1918-20 which claimed the lives of more than 50 million people worldwide and as well as the outbreaks of H1N1 (swine flu) and H5N1 (bird flu) diseases the occurred in recent

years. Whenever an infection occurs, cytokine storm occurs evidently with a surge of activated immune cells into the lungs, which instead of combating the antigen, leads to the inflammation of the lung, fluid build-up, compounding to respiratory distress. To make things worse, the unsustainable cytokine storm can cause organ damage not specifically to the lungs but can also spread far beyond it to the kidneys and heart as well resulting in multiple organ damage. Hence, the vitality of the host body decreases. If the infection is severe, it can also cause a depletion of the white blood corpuscles (WBC's) which are tasked with fighting the infection in the frontline. Thus, these reactions make the host body more vulnerable to other secondary infections which may ultimately lead to death. In many ways, it is the immune response of the body in trying to battle the virus that ends up being suicidal.

Although the scientists have decoded how the overreaction of immune system leads to mortality, little is known on how to control or regulate the immune response. In the absence of a specific antiviral drug for COVID-19 disease, several researchers and scientists have suggested that the goal of the treatment must be to combat the symptoms through intensive maintenance of organ function- the only way to reduce the mortality rate right now.

However, building immunity to the global pandemic can also be seen as an alternative. For example, researchers quoted that people with adequate levels of vitamin D are less prone to get affected by covid-19. They suggest that, vitamin D not only enhances our innate immune system, but it also prevents our immune system from becoming dangerously overactive. Herd immunity can also be another alternative to achieve higher immunity against the disease but the risks involved are many and the success depends on the population structure of each country. Several drugs like hydroxychloroquine and arsenic album are also being tested for their efficacy to combat the virus. A recent development like plasma therapy is another promising solution which seems to be quite successful.

Nevertheless, the ambiguity continues on what can regulate the immune response from overreacting. As coronavirus is just like a new animal in the zoo, researchers around the world are diligently working in finding a way to tame it. Just like the two faces of a coin, immunity and mortality are the two faces of global pandemic. The immunity factors which are most vital for the cure of the disease can also be a deadly weapon if uncontrolled and unmonitored. Preventing the untenable overreaction of immune system is the pivotal factor in deciding the fate of the infected

individual. Hence it is high time we realize that “IT IS NOT THE VIRUS THAT IS THE KILLER, BUT OUR OWN IMMUNE RESPONSE”.

Name: Miss. Geeta P Chinagi

College Address: Chandragiri College of Education for Women (B. Ed)

Shivabasava Nagar, Belagavi

Mobile No.: 6364470712

Email id: geetachinagi.87@gmail.com

INTRODUCTION:

As we know from few months whole human society is in very terrible condition because of the virus called ‘CORONA’. Already more than lakh people died by this virus. Unfortunately till now no one can able (countries) find the vaccine to cure completely. This Corona Virus is infecting all types of age groups especially small kids and old people, the people having respiratory system problems like asthma, kidney problems, and lungs problems are more victim for this virus. But the fact is “the one who is having strong immunity system or the strong body and mind can easily prevent the disease”.

Since ancient time we have been facing so many types of diseases from viruses, in these cases the herd immunity strategy, which would allow a majority of the population to gain resistance to the virus by becoming infected and then recovering, could result in less economic devastation and human suffering than restrictive lockdowns designed to stop the virus's spread, a number of experts have begun to argue in the nation of 1.3 billion people.

"No country can afford a prolonged period of lockdowns, and least of all a country like India," said Jayaprakash Muliyil, a prominent Indian epidemiologist. "You may be able to reach a point of herd immunity without infection really catching up with the elderly. And when the herd immunity reaches a sufficient number the outbreak will stop, and the elderly are also safe."

A team of researchers at Princeton University and the Center for Disease Dynamics, Economics and Policy, a public health advocacy group based in New Delhi and Washington, has identified India as a place where this strategy could be successful because its disproportionately young population would face less risk of hospitalization and death.

They said allowing the virus to be unleashed in a controlled way for the next seven months would give 60% of the country's people immunity by November, and thus halt the disease.

Mortality could be limited as the virus spreads compared to European nations like Italy given that 93.5% of the Indian population is younger than 65, they said, though no death toll projections were released.

The radical proposal underscores the challenges that poorer developing countries — including nations like Indonesia and some in sub-Saharan Africa — face in curbing the epidemic using the lockdown measures that have been adopted by advanced economies.

Ayurveda helps boost immunity against COVID-19:

As the world scrambles to find a cure for COVID-19, health experts have suggested boosting the body's immune system may help minimize the effects and hasten the recovery from the disease. They say ayurvedic herbs such as tulsi, cinnamon, black pepper, shunthi (dry ginger) and raisins and regular yoga are potent aids to increase the body's immunity against harmful viruses.

As the world grapples with this unprecedented healthcare challenge that has impacted millions of lives across countries and affected nearly all economic and social spheres - governments, medical professionals and businesses are working towards mitigating the situation and preventing its spread.

While scientists across the globe work hard on finding an antidote to the virus, Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) in India has come out with recommendations with special references to respiratory health.

Ayurveda, being the science of life, propagates the gifts of nature in maintaining healthy and happy living. Ayurveda's extensive knowledge based on preventive care derives from the concepts of Dinacharya - daily regimes and Ritucharya - seasonal regimes to maintain healthy life. It is a plant-based science. The simplicity of awareness about oneself and the harmony each individual can achieve by uplifting and maintaining his or her immunity is emphasized across Ayurveda's classical scriptures.

General measures:

1. Drink warm water throughout the day.
2. Daily practice of Yogasana, Pranayama and meditation for at least 30 minutes.

3. Spices like Haldi (Turmeric), Jeera (Cumin), Dhaniya (Coriander) and Lahsun (Garlic) are recommended in cooking.

Ayurvedic immunity promoting measures:

1. Take Chyavanprash (Ayurvedic Jam) 10gm (1tsp) in the morning. Diabetics should take sugar-free Chyavanprash.
2. Drink herbal tea / decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black pepper), Shunthi (Dry Ginger) and Munakka (Raisin) - once or twice a day. Add jaggery (natural sugar) and / or fresh lemon juice to your taste, if needed.
3. Golden Milk- Half teaspoon Haldi (turmeric) powder in 150 ml hot milk - once or twice a day.

Simple Ayurvedic procedures:

1. Nasal application - Apply sesame oil / coconut oil or Ghee in both the nostrils (PratimarshNasya) in morning and evening.
2. Oil pulling therapy- Take one tablespoon sesame or coconut oil in mouth. Do not drink, swish in the mouth for 2 to 3 minutes and spit it off followed by warm water rinse. This can be done once or twice a day.

During dry cough / sore throat:

1. Steam inhalation with fresh Pudina (Mint) leaves or Ajwain (Caraway seeds) can be practiced once in a day.
2. Lavang (Clove) powder mixed with natural sugar / honey can be taken 2-3 times a day in case of cough or throat irritation.
3. These measures generally treat normal dry cough and sore throat. However, it is best to consult doctors if these symptoms persist.

Finally these prescriptions helps only those who can able to practically adopts to their daily routine, and tries to change the wrong habits which can leads towards such diseases. All people should have cleanliness, patience and awareness about their physical and mental health, we literate people should spread these right messages or right information.

Name: Mr. Hritith Pandit

College Address: Vishwadarshana English Medium School, Ganeshpuram, Yellapur

Mobile No.: 9448127755

Email id: ankithvishalpandit@gmail.com

The Coronavirus {COVID-19} outbreak came to light when on December 31, 2019, China informed the world health organization [WHO] of a cluster of cases of pneumonia of an unknown cause in Wuhan city of China. Corona virus is a large family of viruses that can cause illness ranging from the common cold to more severe illness. A novel corona virus as it is known is a new strain that has not been previously identified in humans. COVID -19 is now a cause of huge number of deaths across the world. Till now, no proper drug or vaccine has been developed for treatment of this disease as it is so new to us human kind. However, clinical trials and research is being carried on for the development of drug and vaccine.

There is a rumor that COVID-19 affects different people in different ways. Most of the people will be affected with common symptoms like fever, dry cough and tiredness, but there are also less common symptoms like aches and pains, sore throats, diarrhea, loss of taste and smell and loss of speech or movement, chest pain or pressure and then all of this leads to death. There are presently 6.42 million confirmed deaths and 383 thousand deaths in the whole world. As In India there are 227 thousand confirmed cases and 6,348 deaths.

With regard to immunity there lies a big question that cans “boosting your immune system protects you? Of the rumors circulating on social media one of the more bizarre is the idea that you can raise your white blood cell count by nutritional advices. This time, we are being encouraged to seek out foods rich in antioxidants and Vitamin c and eating garlic will protect you from COVID -19.

The best way to avoid this pandemic is to wash hands regularly for 2 minutes with the 5 step process. The novel corona virus which causes COVID -19 can multiply in infected people and is mainly transmitted between people who have close contact with one another. It can be transferred through droplets which are produced when an infected person cough or sneezes, when an infected person coughs or sneezes, if their droplets reach others nearby it can get them infected. We can avoid all this by wearing a mask.

We humans are born to survive, we survived the 1918 plague. With the proper precautions we can kick out corona virus from the face of the Earth. But it's not gone be that easy. So for some time the mask, social distancing will be the new normal and we got live with it and we get used to it.

Name: Mr. Jinendra Patil

College Address: Karnatak University, Dharwad

Mobile No.: 8150986626

Email id: jinendrapatil254@gmail.com

Covid-19:

Covid-19 which has affected over 1.5 million peoples globally and killed more than 100000 peoples and this corona viruses responsible for the common cold, attack the body. The immune system has a predictable response. It is the degree to which this response is tolerated by the body that determines the mortality rates.

Immune system is designed to detect and destroy foreign invaders inside the body like bacteria and viruses. When working optimally, the immune system can prevent sickness when were exposed to germs. Several factors like sleep, diet, stress, and hygiene can affect the immune systems performance and any offsets in these behaviors can cause the havoc on immune function

Immune function has suffered due to stress, lack of sleep, binge eating behaviors.

1) EXERCISE IN MODERATION:

Physical activity is vital for ensuring an effective lymphatic system as, unlike the circulatory system, it relies on muscle contraction to keep up the flow. Too much exercise; however, is deter mental as it depresses immunity.

Maximize immune supportive nutrients:

VITAMIN C: it enhances white blood cells response, increases interferon levels and improves the integrity of the mucous membranes.

VITAMIN A: it plays an essential role in the health of the skin and mucosal barriers as well as enhancing white blood cell function, antibody response and thymus function.

VITAMIN E: it is a vital for both cell- mediated and antibody related immunity and deficiency results in significant impairment of immune system.

2) LIVE LITTLE DAIRY:

Our immune system develops properly when we are exposed to bugs, So let your children or grandchildren get grubby outside.

GO SPARINGLY WITH SUGAR:

Sugar significantly reduces the ability of white blood cells to destroy pathogens. It is thought this effect starts as little as 30 minutes after consuming it, lasts over five hours, reduces effectiveness by up to half and is dose dependent – increasing amounts of sugar cause greater negative impact. Glucose is also thought to compete with vitamin c in the body. This behaves the differently sugar in the body.

BE MINDFUL OF ALCOHOL INTAKE:

Alcohol is known to increase susceptibility to infection lowering the rate at which white blood cells mobilize to areas of infection.

1) HAND WASHING:

People tend to overestimate their hygiene:

Studies show that 67% of peoples wash their after using public restrooms. As you probably know, the restroom isn't the only place you should be washing your hands after participating in other activities that significantly increase risk of exposure to microbes like handling money coughing or sneezing.

2) SLEEP CYCLES

The immune system is influenced by the sleep-wake cycles of our circadian rhythms. Studies suggest that while sleeping us have decreased levels if the stress hormone cortisol, which can suppress the immune function, and increased signals that activate the immune system. According to the Gallup survey,56% of adults say they get enough sleep.

3) NUTRIENTS FROM FOOD:

Everywhere we turn, we see PSAs, news stories and blogs boasting the importance of fruits and vegetables for a plethora of health reasons, and the same applies to immune health. Studies show the vitamins C, A, E, B6 and B12 and, minerals like iron and zinc are important for the maintenance of the immune function.

4) CORTISOL LEVELS:

Another challenge for covid that plagues our immune system is a familiar foe to many us. Hectic work schedules and abundant daily responsibilities can leave us frazzled. Increase levels of the stress hormone make it difficult for the immune system to function properly. In addition to the direct impact of stress on immune function , unmanaged stress can influence sleep pattern.

5) Supplement intake:

To promote and support healthy behaviors, supplement and fortified foods have been widely used to support immune health.

COVID-19 DEATH:

HIGH RISK PEOPLE TO CORONA.....

- Due to blood pressure
- Due to asthma
- Cancer
- Heart problem
- TB
- Stroke
- Pregnant
- Migraine
- Children’s less than years
- People’s more than 60years
- Those who are sensitive, allergic
- Blood pressure: the people with high blood pressure who take all their hypertensive medication in one go at bedtime have better controlled blood vessel problems as compared to those who take their medication in the morning. The Hygeia chronotherapy trial is unusual in monitoring blood pressure for 48 hours, rather than the more usual 24 hours. The researchers had adjusted their analysis to take account of factors that could affect the results such as age, sex, type2 diabetes, kidney disease.

DUE TO ASHTAMA:

Corona virus pandemic is scary for all people, but for those with ASTHAMA there is a great fear that they will have a worse outcome of ars-cov-2. It is important to know that currently there is no evidence and of increased infection rates in those with asthma. Although the centers for disease control and prevention states that patients with moderate severe asthma could be at greater risk for more severe diseases.

CHILDREN’S LESS THAN 10YEARS:

The covid-19 among children’s in china has been less severe than those in adults. Being a young age group wasn’t entirely protective. Infants had higher rates of severe illness than the older children. Testing and researches will be needed to understand the children’s role in spreading the virus in their communities.

PEOPLE MORE THAN 60YEARS:

The people more than 60 years who suffered from the covid 19. This could be because of people between 45 to 60 years of age have other comorbidities like diabetes and hypertension in India. Also we got thousands of students who returned from other countries and were afflicted. While the wider community should indeed be preoccupied with the health and well-being of older adults, there are epicenters to the current crises, and nursing homes and alongside hospitals.

Name: Miss. Komal chandrakant Garad

College Address: Shahaji Chatrapati Mahavidyala Kolhapur

Email id: kamug381995@gmail.com

Indian ‘Aayurveda’ says immunity is nothing but wealthy body , Which is directly depend on our diet. Because it decides how much potential we can get or how much energy we can absorb. Virus ‘Covid-19’ came from other country and disturb whole world. This is the disease Corona is viral disease. And viruses are not identical through open eyes. That’s why we cannot face it directly.

People who have recovered from ‘Covid-19’ may or may not be immune to getting sick again and it’s last. While ‘Covid-19’ accelerates vary fast , it decelerates much more slowly. The worldwide number of ‘Covid-19’ cases is quickly approaching the two million mark, including more than 100000 people who have died according to worldwide ratio. The 2009 H1N1 flu pandemic that estimated to have infected more than 60 million people in the US according to the centres for disease control and prevention. The agency estimates the virus killed nearly 12,500 Americans in the span of one year. Nearly twice that number has already died from Covid-19 in the US where some 570,000 people are confirmed to be infected. More than 440,000 people worldwide are known to have recovered from Covid-19 and their status is an important and lingering question, If people are immune after recovery the thinking goes, they could resume normal life activities more quickly and provide both an economic boost and help in rendering essential services.

But for now, the answer to the question of whether people who have recovered can then be re-infected remains “an unknown”. One expect that a person who generates a full-blown immune response with for a period of time we just don’t know what that to be a reasonable period of protection, But it is very difficult to say that with a new Virus. A preliminary study on antibodies in the blood plasma of 175 patients who recovered from the disease in China offers mixed information about the potential for immunity, according to doctors an emerging disease expert who is the WHO’s technical lead on covid-19. While nothing that the study out of ‘Shanghai’ has not been peer-reviewed, ‘Van Kerkhove’ said the findings suggest different immunity levels for different patients. The WHO declared the virus a pandemic on March 11 and world will suffer from this until we take action.

The study “found some individual has strong antibody response” Van kerkhove said adding whether that antibody response actually means immunity is a separate question. Researchers in that project, she added “found some patients who had no detectable antibody response. And they found some individuals who had a very high response”. “Right now we don’t have a full picture of what immunity looks like”, she said. And until we do, we can’t give a complete answer! citing the complex nature of many covid-19 cases including patients underlying conditions and the body’s sometimes dangerous immune response. People can develop new infections from those circumstances, or possibly get sick with Covid-19 again because they didn’t clear the corona virus from their system.

Virus reported to have originated in China's Wuhan has killed more than 165,000 people and infected some 2.5 million. The world health organization (WHO) has declared to the new Corona virus outbreaks, which originated in Wuhan, China, a pandemic. The coronavirus family causes illness ranging from the common cold to more severe disease such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) according to the WHO. They circulate in animals and humans. Several coronavirus are circulating in animals that have not yet infected humans. The new Corona virus, the seventh known to affect humans has been named Covid-19. Common signs of infection include fever, coughing and breathing difficulties. In severe cases, it can cause pneumonia, multiple organ failure and death. The incubation period of covid-19 is thought to be between one and 14 days. It is contagious before symptoms appear which is why so many people get infected. Infected patients can be also asymptomatic, meaning they do not display any symptoms despite having the virus in their system. Virus came from China. On Feb-7. Chinese researchers said the virus could have spread from an infected animal to humans through illegally trafficked pangolins, prized in Asia for food and medicine.

As of April 19, the global death toll surpassed 154,000 amid more than 2.35 million cases. More than 611, 000 people have recovered from the disease worldwide, according to the data collected by the Johns Hopkins University in the United States. Up to this, it was all about research and result on covid-19. But now what will be the conclusion? Causes of corona are contact with patient or contact with that any object which is used by them. It shows very common symptoms such as coughing and sneezing just like a common flu. It can also show fever. Every coughing person is not a corona patient but every corona patient was a coughing person. For dictation there

are two types in coughing such as coughing with cough and coughing without cough. Here coughing with cough is not but coughing without cough will be the symptom of corona. Hence our democratic system always tries to hammer this thing on our brain to reduce social contact. To keep special distance. And for avoid contact use mask, hand gloves compulsory. Through social distancing we can avoid contact with corona but we cannot stop it, because still we are unable to found proper vaccine on it. Right now treatment of corona patients is carried out by using malaria vaccine, due to similar symptoms with corona. It became helpful to recover first stage patients but not to all. Therefore there is only one option to stay safe from corona is social distancing. Lockdown makes very positive effects on environment. Within this corona period people started to avoid transport as well as migration. There is no air transport and water transport also. Which is resulting into reducing 17% of air pollution worldwide? There is no excess amount of CO in air. A country which was trying to reduce this high amount of pollution by running some special projects on it was unsuccessful but that 0.002 m virus did it.

The WHO recommends basic hygiene such as regularly washing hands with soap and water and covering your mouth with your elbow when sneezing or coughing. Avoid touching your face, eyes and mouth with unwashed hands. Avoid unnecessary, unprotected contact with animals and be sure thoroughly wash hands after contact. Most people who have caught the virus have not died, just like with the flu. Doctors are working really hard to keep an eye on anyone who is feeling sick. They want to make sure everyone gets the help they need and to keep the virus from spreading. So urge to everyone please respect our police and doctors. They are fighting for you to keep us safe. Let them do their duty. Don't disrespect them. Now what is important? You keep doing what you love to do and not let worries about the boss you around. If you're doing what you love while practicing healthy behaviors like sneezing into your elbow and washing your hands after you go to the bathroom, then you're showing the virus and the worries who is boss instead.

The slow pace of controlling the respiratory disease means that restrictions such as business shutdowns and stay at home orders should only be lifted slowly. They added that such measures can only lifted if the right public health measures are in place, including significant capacity for contact tracing. Everyone is working hard to manage the virus. You can show your children that you, too can continue to do what is important to you while practicing healthy behaviors.

Name: Miss Laxmi Mantur

College Address: KLEs, G I Bagewadi College Nipani

Mobile No.: 7676741813

Email id: laxmiamantur@gmail.com

Introduction

Corona virus disease 2019, covid19 is an infectious disease caused by severe acute respiratory syndrome. Coronavirus it was first identified in December 2019 in Wuhan, china has since spread globally, resulting in an going it has one of the infectious diseases. Symptoms are the fever, cough, fatigue, shortness of breath; loss of smell, The Corona virus continues to spread In Asia, Europe and the Middle East. The best way to prevent and slow down transmission is be well informed about the Covid19 virus, the disease it causes and how it spreads protect yourself and others from infections by washing your hands or using an alcohol based rub frequently and not touching your face. The Corona virus disease is an infectious disease caused by newly discovered corona- virus.

Explanation

Ayurveda helps to boost the immunity against Covid19 as The world scrambles to find cure for Covid19, health’s experts have suggested boosting the body’s immune system may help minimize the effect and hasten the recovery from the disease they say ayurvedic herbs such as a tulsi, cinnamon, and black pepper, shunthi, and regular yoga are protect aids to increase the body’s immunity against the harmful virus.

Prime Minister Narendra Modi recently highlighted benefits of Ayurveda he said good health is the harbinger of happiness.

WHO has published guidance an adjusting public health and social measures for the text phase of the Covid19 response? The development of immunity to a pathogen through natural infections is a multi step process that typically takes place over 1-2 weeks. The body responds to a viral infections immediately with a non specific innate response in which macrophages , neutrophils and dendritic cells slow the progress of virus and may even prevent it from causing symptoms.

Immunity’s of covid-19

- The study monitored 10 men’s over 35years to determine antibody levels following infections for any of the four seasonal human Corona viruses.
- Short lasting immunity with rapid loss of antibodies, this may well be a general denominator for human Corona viruses.
- Ideas on cast aspirations floated by some government’s to introduce so , called immunity passports to people who contracted and recovered from the deadly covid19 viruses that would allow they to travel and relax some social distancing measures.
- As protective immunity may be lost by 6 months post infection, the prospect of reaching functional immunity by natural infections seems very unlikely they warns.
- According to Britain’s health secretary system of certifications to enable people who have recovered to resume certain activities.
- In, Italy a large scale study into the seroprevalence the level of pathogens in the populations of covid19 launched on Monday.
- The ministry of health of the red Cross will test blood samples from 150,000 people from across 2,000 municipalities for antibodies.
- According to who, 10 candidates vaccines are currently in clinical evaluation and a further 114 are in pre clinical evaluation.
- Immune hunters are called t cells can seek and destroy a cell infected with and making copies.
- T cell found in covid19 patients bode well for long term immunity.
- Plasma therapy- the pale yellow liquid that forms 55% of human blood and contains the blood cells.
- Several countries including, India,are seriously looking at plasma therapy as a potential treatment for covid19, the deasee caused by the novel Corona virus plasma therapy uses blood donated by recovery patients to introduce antibodies in theory under treatment we take a look at what consvalesent plasma therapy is the benefits and risk involved in the potential treatment.
- Plasma therapy aims using antibodies from the blood of a recovered covid19 patient to treat those critically affected by the virus. The theory can also used to immunise those at a high risk of contracting the virus such as health workers, families of patients of other high.

Deaths of covid-19

The death rate for Corona virus could be significantly lower than that was previously thought a new study has found it was based on finding from new compressive analysis of Corona virus cases in mankind China.

The death rate caused by the virus after taking into account both confirmed and confirmed cases was 0.66percent,the study found the rate from confirmed covid19 cases turned out to be 1.38percent.The researcher involved in the study examined thousands of confirmed cases reported in wuhan the viruses epicentre in chains.

Corona virus deaths of recent updates 6,366,533,total deaths 377,437, and recovered by 2,903,605.the Corona virus affecting 213 countries andterrestrial around the world and international conveyance the day is reset after midnight the list of countries is based on United national of geoscheme.

The number of actual cases we need to know the number of actual cases that have already had an outcome not the current cases that still have to resolve.

The number of actual deaths related to the closed cases examined world meter analysed that data provided by newyork state antibody study and excess deaths analysis by the c d c then we get mortality rate of Corona.

Conclusion

From this we know about how much dangerous the Corona virus let us we start live in the society very carefully. Because we know the spreading of Corona in every where according to the inventions there are 213 countries got a Corona and many peoples are died there are lot peoples suffering from this virus we know very well about symptoms of this Corona viral fever, cough like that many symptoms are there for Corona it is first found chaina many peoples are suffering from this Corona we have to know one thing we should safe, healthy and save lives this is our main intension we should known then many social works, political works are left behind so carefully we need face the this world wide Corona.

If you are healthy, you need to wear a mask if you are taking care of a person with suspected 2019. Measure effective only used in combination with frequent hand

cleaning with alcohol based hand rub soap and water if you wear a mask then you must know how to use if it dispose it properly.

Name: Miss. Manjula Bhave

College Address: KLEs, G I Bagewadi College Nipani

Mobile No.: 973176730

Email id: manjulabhav2000@gmail.com

Introduction :-

Coronaviruses are family of viruses. That causes the illness such as respiratory disease. Respiratory diseases can ranges from the common cold to more severe diseases, such as Middle East Respiratory Syndrome [MERS-CoV] and Severe Acute Respiratory Syndrome [SARS-CoV]. A novel Coronavirus is a new strain that not identified previously in human beings. The disease COVID-19 caused by the virus SARS-CoV-2 . The name 'Coronavirus' is got their name from the way they look under microscope. The virus consist of a core of genetic material surrounded by an envelope with protein spike. This gives it the appearance of Crown. The word 'corona' means crown in Latin.

Corona viruses are zoonotic, it means they transmitted between the animals and human being. MERS-CoV was transmitted from dromedary camel. SARS-CoV-2 it's origin is yet to be determined.

Symptoms of COVID-19:-

The most common symptoms of COVID-19 are fever, tiredness, and dry cough. Some patients may have aches and pains, nasal congestion, runny nose, sore throat or diarrhea. These symptoms are usually mild and begin gradually. Some people become infected but don't develop an symptoms and don't feel unwell. Most people (about 80%) recover from the disease without needing special treatment. Around 1 out of every 6 people who gets COVID-19 becomes seriously ill and develop difficulty breathing. Older people, and those with underlying medical problems like high blood pressure, heart problems or diabetes, are more likely to develop serious illness. People with fever, cough and difficulty breathing should seek medical attention.

Mode of transmission of Coronavirus:-

People can catch COVID-19 from others who have the virus. The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. These droplets

land on objects and surfaces around the person. Other people then catch COVID-19 by touching these objects or surfaces, then touching their eyes, nose or mouth. People can also catch COVID-19 if they breathe in droplets from a person with COVID-19 who coughs out or exhales droplets. This is why it is important to stay more than 1 meter (3 feet) away from a person who is sick.

Immunity Response to coronaviruses:-

Immunity is capability of organism to resist diseases or microorganisms such as bacteria, fungus and viruses from entering it.

The study by the Benjamin tenover, a professor of biology at Mount Sinai Ichan School of Medicine.

When coronaviruses attack the first cell in body. That cell has two jobs to do before it dies. Infected cells need to issue a call for reinforcement, sending out a cascade of chemical signals that activate an army of immune cells to come battle the invading virus. And it needs to issue a warning to other cells around it to fortify themselves. Something it does by releasing proteins called interferons. When interferons land on neighboring cells, they trigger those cells to enter defensive mode. The cells slow down their metabolism and stop transport of proteins and other molecules. And also slow down the process of transcription (the process by which genetic instructions become proteins and other molecules.)

* A cascade of viral particles enters the body through the nose, eyes or mouth. Breathing carries some of these particles to the lower respiratory tract where the spike proteins of the coronavirus, acting like a key, lock into epithelial cells that line the respiratory tract as well as those in the air sacs in the lungs. SARS-CoV-2 is able to stay undetected longer than many flu or coronaviruses and its spike proteins are able to gain entry by unlocking the ACE2 (Angiotensin-converting enzyme 2) protein on the lung cells. Once in, they hijack the cell's machinery, replicate and multiply and infect adjoining cells. Like the defining ACE2 proteins on the epithelial cells, viruses too have a tell-tale signature on their surface called antigens and spotting these is what kicks the immune system into action by producing antibodies.

* Study led by researcher Chen Dong of Institute for Immunology and School of Medicine at Tsinghua University Beijing analyzed the blood of 14 COVID-19 patients

,who have already experienced mild symptoms of COVID-19.14 days after the discharge .13 of them show high level of antibodies to SARS-CoV-2.

Herd Immunity:-

* When the word 'Immunity' Comes against the COVID-19, some experts think that using the process “Herd Immunity “.Herd immunity,it is the form indirect protection from infectious disease.that occurs when large number of population has become immune to infectious disease.Whether to vaccination or previous infection.and also providing a measures of protection for individuals who are not immune.

Some experts said that,India having large number of young people.About 87-88% of Indian population is young people.Already studies show that,coronavirus is not affect that much in young people.We should take care of only remaining 12-13% of elder people.Providing them proper treatment.Then the immunity is develops against Coronavirus.

Is it possible to achieve Herd immunity against Coronavirus ?.

- ◆ No,because since there is no vaccin available for COVID-19.
- ◆ Another problem is that asymptomatic people.These people do not develop any symptoms of COVID-19, yet they have capability of transmitting it. This peculiar ability of Coronavirus to be transmitted by people not showing symptoms is major reason for pandemic.
- ◆ Our country having large number of young people population.But there is no data about how many are healthy .How many are suffering from respiratory problems because of air pollution.
- ◆ And in some young people immune system is weak, because of lack of nutrients in the food.
- ◆ Already England is called for Herd immunity practice,but the result is uncontrolled number of COVID-19 cases.
- ◆ If our country calls for Herd immunity practice,the situation become very critical.Number of COVID-19 cases increases .It us not possible to provide proper treatment to all due to deceased economy of the country.

COVID-19 DEATHS

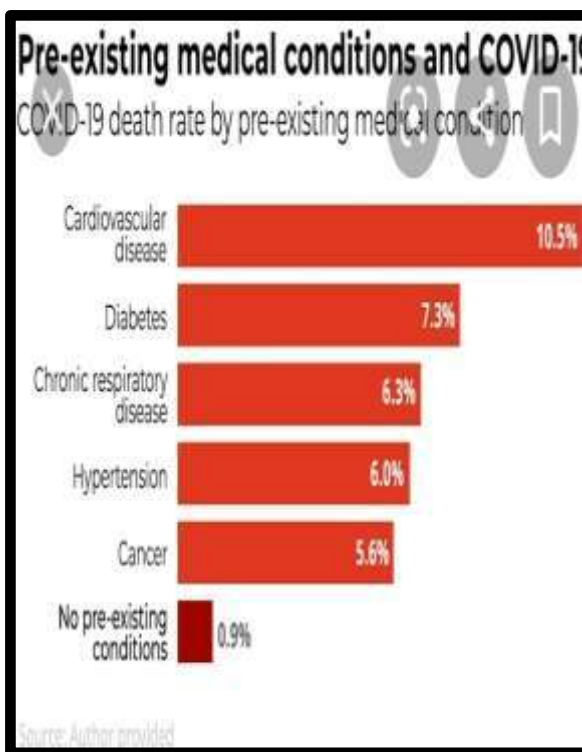
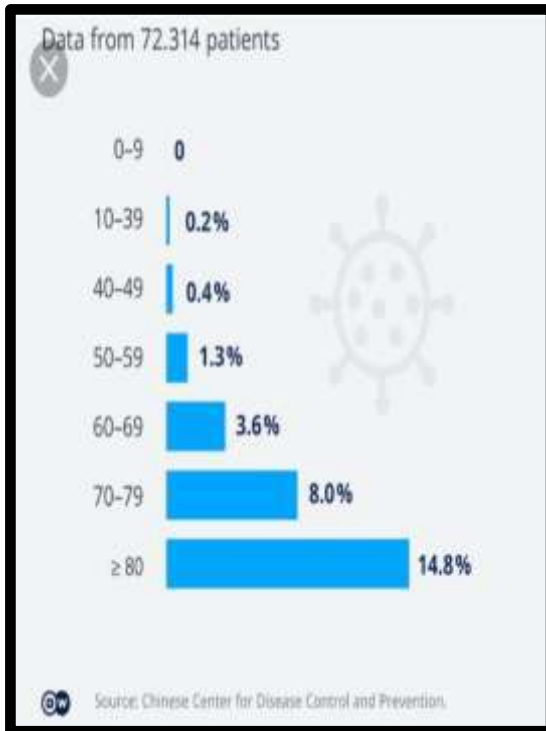
COVID-19 death is defined for surveillance purposes as a death resulting from a clinically compatible illness in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID disease (e.g. trauma). There should be no period of complete recovery between the illness and death.

COVID-19 is a new disease and there is limited information regarding risk factors for severe disease. Based on currently available information and clinical expertise, older adults and people of any age who have serious underlying medical conditions might be at higher risk for severe illness from COVID-19.

Based on what we know now, those at high-risk for severe illness from COVID-19 are:

- ◆ People 65 years and older
- ◆ People who live in a nursing home or long-term care facility
- ◆ People of all ages with underlying medical conditions, particularly if not well controlled, including:
 - ◆ People with chronic lung disease or moderate to severe asthma
 - ◆ People who have serious heart conditions
 - ◆ People with severe obesity (body mass index [BMI] of 40 or higher)
 - ◆ People with diabetes
 - ◆ People with chronic kidney disease undergoing dialysis
 - ◆ People with liver disease

A) Age vs COVID-19 deaths B) Pre-existing medical vs COVID-19



(A) (B)

By observing the above graphs we can conclude that, People with low immunity are at higher risk for COVID-19 disease.

You can reduce your chances of being infected or spreading COVID-19 by taking some simple precautions:

- ◆ Regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water. Why? Washing your hands with soap and water or using alcohol-based hand rub kills viruses that may be on your hands.
- ◆ Maintain at least 1 metre (3 feet) distance between yourself and others. Why? When someone coughs, sneezes, or speaks they spray small liquid droplets from their nose or mouth which may contain virus. If you are too close, you can breathe in the droplets, including the COVID-19 virus if the person has the disease.
- ◆ Avoid going to crowded places. Why? Where people come together in crowds, you are more likely to come into close contact with someone that has COVID-19 and it is more difficult to maintain physical distance of 1 metre (3 feet).
- ◆ Avoid touching eyes, nose and mouth. Why? Hands touch many surfaces and can pick up viruses. Once contaminated, hands can transfer the virus to your eyes, nose or mouth. From there, the virus can enter your body and infect you.
- ◆ Make sure you, and the people around you, follow good respiratory hygiene. This means covering your mouth and nose with your bent elbow or tissue when you cough or sneeze. Then dispose of the used tissue immediately and wash your hands. Why? Droplets spread virus. By following good respiratory hygiene, you protect the people around you from viruses such as cold, flu and COVID-19.
- ◆ Stay home and self-isolate even with minor symptoms such as cough, headache, mild fever, until you recover. Have someone bring you supplies. If you need to leave your house, wear a mask to avoid infecting others. Why? Avoiding contact with others will protect them from possible COVID-19 and other viruses.
- ◆ If you have a fever, cough and difficulty breathing, seek medical attention, but call by telephone in advance if possible and follow the directions of your local health authority. Why? National and local authorities will have the most up to date information on the situation in your area. Calling in advance will allow your health care provider to quickly direct you to the right health facility. This will also protect you and help prevent spread of viruses and other infections.
- ◆ Keep up to date on the latest information from trusted sources, such as WHO or your local and national health authorities. Why? Local and national authorities are best placed to advise on what people in your area should be doing to protect themselves.

Name: Miss. Pratiksha Tanaji Patil

College Address: Shri Shahaji Chatrapati Mahavidyala, Kolhapur

Mobile No.: 8275204348

E-mail Id: pratiksha18122000@gmail.com

COVID-19: A war of contagion nature against human. The world is battling the most severe global outbreak (pandemic) of recent times due to the novel corona virus namely the ‘Severe Acute Respiratory Syndrome virus 2 (SARS-Cov-2)’. The smallest microorganism showed humans their place on planet earth as they grow, multiply and spread much more than *Homo sapiens*. It began with reports on mysterious pneumonia cases in Wuhan district of Hubei province, China in December 2019 with the first-ever death by Coronavirus disease 2019 (COVID-19) on January 11, 2020, there. Though most countries initially ignored this novel infection. The Indian health authorities including the Indian Council of Medical Research (ICMR) became active immediately reporting the first laboratory-confirmed case at the National Institute of Virology (NIV), Pune on January 30. India reported its first death of COVID-19 on March, 11, two months later than in China. In a short span of time, COVID-19 has become a rapidly spreading communicable disease forcing the World Health Organization (WHO) to declare it as the "Public Health Emergency of International Concern" on January, 30. Globally, as on 8th June 2020, there have been 6,931,000 confirmed cases of COVID-19, including 400,857 deaths, reported to WHO.

The development of immunity pathogens through natural infection is a multi-step process that typically takes place over 1-2 weeks. The body responds to a viral infection immediately with a non-specific innate response in which macrophages, neutrophils and dendritic cells slow the progress of the virus and may even prevent it from causing symptoms. This non-specific response is followed by an adaptive response where the body makes antibodies that specifically bind to the virus. These antibodies are proteins called immunoglobulins *viz.* IgA, IgD, IgE IgG, IgM. The body also makes ‘T’ cells that recognize and eliminate other cells infected with the virus. This is called cellular immunity. This combined adaptive response may clear the virus from the body, and if the response is strong enough, it may prevent progression to Severe illness or re-infection by the same virus. This process is often

measured by the presence of antibodies in the blood. WHO continues to review the evidence on antibody response to infection of SARS-CoV-2.

The quarantine politics, established in most countries, have led consumers to increase their demand for online shopping for home delivery. Consequently, organic waste generated by households has increased. Also, food purchased online shipped packed, so inorganic waste has also increased. Finally, we highlight the implications of these approaches for potential therapeutic interventions that target viral infection and immunoregulation.

The second and equally important factor is the rated environment and food habits that may provide a degree of resistance to infection. Much literature exists in Ayurveda and other Indian systems of medicine on the definitive beneficial effects of Indian spices in augmenting immunity, for example, turmeric that contains curcumin (active compound polyphenol) is the most common food ingredients of the Indian kitchen. Curcumin is known to have antioxidant anti-inflammatory, antibacterial and wound healing properties. Several reports suggest it's potential in treating arthritis, cancers, cardiovascular and inflammatory bowel disease. Similarly, there is a long list of several other spices being used routinely as food ingredients in the Indian curry. The broad geographic diversity of the Indian sub-continent ranging from the Himalayan mountains to beaches and deserts and the variable climatic conditions along with a variety of lifestyle habitat across various regions and states of its people. We anticipate that this epigenetics, environmental and lifestyle-related factors could influence largely unexplored immunity against COVID-19 here.

COVID-19: Countdown

The COVID-19 pandemic in India is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by SARS-Cov-2. As of 6th June 2020, the Ministry of Health and Family Welfare have confirmed a total of 6,737,606 cases, 3,273,793 recoveries and 393,775 deaths all over the world. India currently has 235,540 cases, 109,462 recoveries and 6,348 deaths. India currently has the largest number of total confirmed cases in Asia, with the number of total confirmed cases breaching the 100,000 marks on May, 19 and 200,000 on 3 June. India's case fatality rate is relatively lower at 2.80%, against the global 6.13% as of 3 June. Six cities account for around half of all reported cases in the country - Mumbai, Delhi, Ahmadabad, Chennai, Pune and Kolkata. As of June, 8, 2020, Lakshadweep and Daman and Diu are the only regions that has not reported a case.

The COVID-19 pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities and colleges. Most governments around the world have temporarily closed educational institutions in an attempt to contain the spread of COVID-19. As of 7th June 2020, approximately 1.725 billion learners are currently affected due to school closures in response to the pandemic. According to UNICEF monitoring, 134 countries are currently implementing nationwide closures and 38 are implementing local closures, impacting about 98.5 percent of the world’s student population. In the 39 countries' schools are currently open.

School closures impacted not only students, teachers, and families but have far-reaching economic and societal consequences. School closures in response to the pandemic have shed light on various social and economic issues, including student debt, digital learning, food insecurity and homelessness, as well as access to childcare, health care, housing, internet and disability services. The impact was more severe for disadvantaged children and their families, causing interrupted learning, compromised nutrition, childcare problems, and consequent economic cost to families who could not work.

COVID-19: Effect on the environment

The worldwide disruption caused by the impact on the environment and the climate. The considerable decline in planned travel has caused many regions to experience a large drop in air pollution. In China, lockdowns and other measures resulted in a 25% reduction in carbon emissions, reducing air pollution can reduce both climate change and COVID-19 risks but it is not yet clear which type of air pollution are common risks to both climate change and COVID-19. On the other hand, the safe management of domestic waste could be critical during the COVID-19 emergency. Along these same lines, the UN environment program urged the government to treat waste management, and environmental effects.

This pandemic also affects the greenery of our nation. Our government allowed us to improve and develop cultivation in the Western Ghats. After these pandemics dangerous and harmful factories whenever open then lots of natural disasters may happen, Western Ghats are included in the international legacy as one of the eighth hot spots. The Western Ghats blessed with huge biodiversity, minerals, ores and lots of habitats of plants and animals. The length of Western Ghats is up to 16000 km area. According to scientists, there have been applied some limits, but these

limits or rules are not been followed. Due to excessive growth in industries, cutting trees decreasing areas of jungles the Western Ghats are losing their natural treasury.

The states such as Maharashtra, Karnataka, Goa, Gujrat and Kerala are infrared in the development of Western Ghats, but under the name of development many of the trees from forest areas are to cut which is harmful to ecosystems, this should be stopped somewhere. Development is necessary but for that destructing nature is not good. Development can be done by using some measures. Create powerful laws and rules for development in these areas.

Finally, it is concluded that COVID-19 will produce both positive and negative indirect effects on the environment, but the latter will be greater. All over the universe is suffering from a dangerous virus and also slowly get recovering this critical situation and the total recovery is possible when people take their own care and follow all therapies given by the government on that situation, we can't escape from it so stay safe.

Name: Miss Priyanka Babasaheb Salunkhe

College: KLE society's Basavaprabhu Kore College Chikodi

Email-ID: Psalunkhe937@gmail.com

COVID 19 is the infectious disease caused by the most recently discovered coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China in December 2019 COVID 19 is now pandemic affecting many countries globally.

1. What is a corona virus?

Corona viruses are a large family of viruses, which may cause illness in animals or humans. In humans several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe disease such as Middle East respiratory syndrome (MERS) and severe Acute Respiratory syndrome (SARS). The most recently discovered coronavirus cause coronavirus disease COVID 19.

2. What are the symptoms of COVID 19?

The most common symptoms of COVID 19 are fever, dry cough, and tiredness, other symptoms that are less common and may affect some patients include aches and pains, nasal congestion, headache, conjunctivitis, sore throat, diarrhea, loss of taste or smell or a rash on skin or discoloration of fingers or toes. These symptoms are usually mild and begin gradually, some people become infected but only have very mild symptoms. Older people, and those with underlying medical problems like high blood pressure, heart and lung problems, Diabetes, or cancer, are at higher risk of developing serious illness. However anyone can catch COVID 19 and become seriously ill. People of all ages who experience fever and cough associated with difficulty breathing/shortness of breath, chest pain / pressure, or loss of speech or movement should seek medical attention immediately. If possible it is recommended to call the health care provider or facility first, so the patient can be directed to the right clinic.

3. How does COVID 19 spread?

The spread of COVID 19 from others who have the virus. The disease spreads primarily from person to person through small droplets from the nose or mouth, which are expelled when a person with COVID 19 coughs, sneezes or speaks. These droplets are relatively heavy do not travel far and quickly sink to the ground. People can catch COVID 19 if they breathe in these droplets from a person infected with the virus. This

is why it is important to stay at least 1 meter away from the others, people can become infected by touching these objects or surfaces, then touching their eyes, nose or mouth. This is why it is important to wash our hands regularly with soap and water or clean with alcohol-based hand rub.

Who is assessing ongoing research on the way that COVID 19 is spread and will continue to share update findings.

4. How can we protect others and ourselves if we don't know who is infected?

When possible maintain at least a 1 meter distance between yourself and other. This is especially important if we are standing by someone who is coughing or sneezing.

Since some infected person may not yet be exhibiting symptoms or their symptoms may be mild. maintaining a physical distance with everyone is a good idea if we are in an area where COVID 19 is circulating.

5. What can I do to protect myself and prevent the spread of COVID 19?

Stay aware of the latest information on the COVID 19 outbreak available on the WHO website and through our national and local public health authority. Most countries around the world have seen cases of COVID 19 and many are experiencing outbreaks, authorities in China and some other countries have succeeded in slowing their outbreaks. However the situation is unpredictable so check regularly for the latest news.

We can reduce our chances of being infected or spreading COVID 19 by taking some simple precautions.

Regularly and thoroughly clean our hands with an alcohol based rub or wash them with soap and water, why? Washing our hands with soap and water or using alcohol based hand rub. Kills viruses that may be on hands.

Maintain at least 1 meter distance between yourself and other why? When someone coughs, sneezes, or speaks they spray small liquid droplets, from their nose or mouth. Which may contain virus. If we are too close we can breathe in the droplets including the COVID 19 virus if the person has the disease.

Avoid going to crowded places. Why? Where people come together in crowds we are more likely to come into close contact with someone that has COVID 19 and it is more difficult to maintain physical distance of 1 meter.

Avoid touching eyes nose and mouth why? Hands touching many surfaces and can pick up viruses. once contaminated hands can transfer the virus to our eyes nose or mouth. From there the virus can enter our body and infect you.

Make sure we and the people around we follow good respiratory hygiene. This means covering our mouth and nose with our bent elbow or tissue when we cough or sneeze. Then dispose of the used tissue immediately and wash our hands. why? Droplets spread virus. By following good respiratory hygiene, we protect the people around me from viruses such as cold flu and COVID 19 .

Stay home and self-isolate even with minor symptoms such as cough, headache, mild fever, until we recover. Have someone bring you supplies. If we need to leave our house wear a mask to avoid infecting others. why? Avoiding contact with others will protect them from possible COVID 19 and other virus.

If we have a fever, cough and difficulty breathing seek medical attention, but call by telephone in advance if possible and follow the directions of our local health authority, why? National and local authorities will have the most up to date information on the situation in our area . Calling in advance will allow our health care provider to quickly direct you to the right health facility. This will also protect you and help prevent spread of viruses and other infections.

Keep up to date on the latest information from trusted source. Such as who or our local and national health authorities. Why? Local and national authorities are best placed to advise on what people in our area should be doing to protect themselves.

6. Is there a vaccine drug or treatment for COVID 19?

While some Western traditional or home remedies may provide comfort and alleviate symptoms of mild COVID 19, there are no medicine that have been shown to prevent or cure the disease, who does not recommend self medication with any medicine including antibiotics as prevention or cure for COVID 19 however there are several ongoing clinical trials of both Western and traditional medicine, who is co-ordinating efforts to develop vaccine and medicines to prevent and treat COVID 19 and will continue to provide update information as soon research results become available . The most effective ways to protect ourself and others against COVID 19 are to

Clean our hands frequently and thoroughly.

Avoid touching our eyes, mouth and nose.

Cover our cough with the bent of elbow or tissue. If a tissue is used discard it immediately and wash our hands.

Maintain a distance of at least one meter from others.

7. can COVID 19 be caught from a person who has no symptoms?

COVID 19 is mainly spread through respiratory droplets expelled by someone who is coughing or has other symptoms such as fever or tiredness. Many people with COVID 19 experience only mild symptoms. This is particularly true in the early stages of the disease. It is possible to catch COVID 19 from someone who has just a mild cough and does not feel ill.

Some reports have indicated that people with no symptoms can transmit the virus. It is not yet known how often it happens. WHO is assessing ongoing research on the topic and will continue to share updated findings.

Deaths of COVID 19

On April 30, West Bengal announced that 105 COVID 19 positive patients had died but did not count 72 of them as they died due to comorbidities. On May 18, Delhi government asked its hospitals not to take samples of dead people to test for COVID 19, also, while the Delhi government's official COVID 19 deaths toll was 68 until May 8, the number of such deaths in just two hospitals in the city that the Hindu accessed was 107. These COVID 19 specific stories along with the fact that India medically certifies only 22% of deaths (as of 2017) suggest that India may be undercounting its dead.

In 2020 deaths due to COVID 19 increased exponentially from the 12th week due to the COVID 19 pandemic in 24 countries in Europe. India's COVID 19 case fatality rate (CFR, Deaths/cases) has always remained low. But data from some European and Asian countries show that since the 10th week of 2020, “excess deaths” have surged. In countries with relatively poorer income levels such as Indonesia and Ecuador, a very small % of those excess deaths have been attributed to COVID 19 with historically poor registration of deaths and medically certified death rate is India to undercounting its dead?

Fatality rate

India’s CFR of 3.1 % (in red) as of may 18 is among the lowest in countries with more than 1 lach case and much below the world average of 6.6 %. The chart plots cumulative case against the CFR as of may 18.

Excess deaths

The chart shows the weekly excess deaths (deviation in mortality from the expected level) in 24countries in Europe from January 1,2016 to may 15 , 2020. In 2020, deaths increased exponentially from the 12thweek due to the COVID 19 pandamic. The spike recorded in the first 10- 12 weeks of 2017, 2018 and 2019 can be attributed to the flu season which was unusual lethal. In 2020 the flu season was relatively less deadly.

Name: Sana Mahe Jabeen

College Name: Bilal college of education for women's, Bidar

Mobile No:8747070283

Email id: mohdimad3441@gmail.com

Introduction:

The coronavirus COVID-19 pandemic is the defining global health crisis of our time and the greatest challenge we have faced since world war two.

Countries are racing to slow the spread of the virus by testing and treating patients, carrying out contact tracing, limiting travel, quarantining citizens, and cancelling large gatherings such as sporting events, concerts, and schools.

The pandemic is moving like a wave- one that may yet crash on those least able to cope. But COVID-19 is much more than a health crisis. By stressing everyone of the countries it teaches, it has potential to create devastating social, economic and political crisis that will leaves deep scars.

Coronavirus:

Researchers first identified a coronavirus in 1937, isolating one that was responsible for a type of bronchitis in birds that had the potential to devastate poultry stocks.

Scientists found evidence of human coronaviruses in the 1960s, in noses of people with common cold. Human coronaviruses that are particularly prevalent include 229E, NL63, OC43 and HKU1.

The name 'coronavirus' comes from the crown like projections on their surfaces. "Corona" in Latin means 'halo' or 'crown'. Novel coronavirus has many spikes on its outer surface. These spikes are used by the virus to hook onto ACE-2 protein (which works for regulation of an enzyme involved with maintenance of blood pressure among other things and it is found on many surface tissues including in lungs) and enter the cell.

Once inside the cell, novel coronavirus multiplies fast and eats up everything before forcing the cell to burst and release next generation viruses to feed on new cells. In two to ten days, there will be enough novel coronaviruses in the body to start showing symptoms like fever, dry cough and breathlessness among others.

Immune system:

Our immune system is our body's defense against infections and other harmful invaders. Without it, we would constantly get sick from germs such as bacteria or viruses. Our immune system plays a major role in preventing the COVID-19 disease with proper medication.

When the coronavirus that causes COVID-19 first began to spread, virtually nobody was immune. Meeting no resistance, virus moved quickly through communities and ultimately around the world. In the absence of an effective treatment or vaccine, stopping it will require a significant percentage of the population to acquire immunity, a state that epidemiologists refer to as herd immunity.

In short, the term describes a condition in which most of a population is immune to an infectious disease, thus conveying indirect protection to those who are not immune. This indirect protection is called herd immunity, also sometimes referred to as herd protection.

For example, if 80% of a population is immune to a virus, four out of every five people who encounter someone with the disease won't get sick, and thus won't spread the disease any further. In this way, spread of infectious diseases can be kept under control. Depending on how contagious an infection is typically 50% to 90% of population must be immune to achieve herd immunity.

If SARs-CoV-2, virus that causes COVID-19, is like other coronaviruses that currently infect humans, we can expect that people who get infected will be immune for months to years, but probably not for their entire lives.

Ultimately, to know how many people are immune to SARs-CoV-2, we'll need to know not only how many people have antibodies, but also how protective those antibodies are.

Although we don't know for sure whether people who have antibodies are immune, it's very likely that most people without antibodies to SARs-CoV2 are not immune because this is new virus to which most people's immune systems have never been exposed. Therefore, although we don't know exactly how many people are immune to SARs-CoV2, studies show that most people- at least two-thirds do not have antibodies, and therefore do not have immunity, against SARs-CoV-2. In other words, most of us are still very much at risk of developing COVID-19.

Protein are important for our immunity. Not enough protein in our diet can weaken our immune system. Many disorder can weaken the immune system and

cause a person to become immunocompromised. Thus disorders can range from birth, while others result from environmental factors. Our immune system can also be weakened by smoking, alcohol and poor nutrition.

Deaths due to Corona:

The first death linked to the coronavirus disease was reported on January 10 in China's Wuhan, where the outbreak was first reported. In India, it was reported in Karnataka on March 11.

Globally, 371023 people have died so far from the coronavirus COVID-19 outbreak and there are 6161928 confirmed cases in 213 countries and territories and in India, total cases are about 182490 and in these 5186 deaths occurred and 86984 are recovered as of May 31, 2020.

The recovery rate in the country is recorded at 47.7%, while the death rate is 2.8%. People of all ages can be infected by new coronavirus (COVID-19). Older people and people with pre-existing medical conditions appear to be more vulnerable to becoming severely ill with virus. WHO advises people of all ages to take steps to protect themselves from virus, for example by following good hand hygiene and good respiratory hygiene.

Seeing the number of deaths occurred we can conclude that the people aged above 60 years(68%-72%) are at high risk of COVID-19. The people aged in-between 20 to 60 years are about 23%-25%, and Children and youths between 0 to 20 years are about 4%-5%. And coming to sex ratio, males(60%-62%) died more than females(38%-40%).

Patients who reported no pre-existing medical conditions had a case fatality rate of 0.9%. Pre-existing illnesses that put patients at higher risk of dying from COVID-19 infection are_ Cardiovascular diseases (13.2%), Diabetes (9.2%), Chronic respiratory disease (8%), hypertension (8.4%) and cancer (7.6%).

Comparison with developed and developing countries:

The coronavirus pandemic has overwhelmed health systems in Europe and North America. The US, France, Italy, Spain and the UK have all experienced shortages of doctors, ventilators, personal protective equipment and testing capacity. But it's going to be even worse in poor countries where medical resources are scarce.

In fact, COVID-19 is the biggest disaster for developing nations in our lifetime. If ever there was a time for concerned citizens and political leaders in both developing and richer countries to come together, it's now.

Poorer people are at greater risk of catching the virus and are more likely to suffer the worst effects of an economic shock. And the poorer the country, less capable it is of addressing people's pressing needs, from identifying and treating cases of virus to supporting communities and business deprived of income. The vast majority of people, who are employed in the informal sector and receive no unemployment, sickness or other benefits and more than a third of all jobs and incomes could be lost as a result of COVID-19.

In many developing nations the economic shock has come first, as governments have locked down their economies to reduce the speed of contagion. As a result, countries in Africa and Latin America, together with Pakistan, India and Bangladesh, are expected to suffer their greatest ever economic decline. One immediate effect of the lockdown is hunger, as transport and disrupted and food supply in many countries - already depleted after years of drought, extreme weather events and recent locust infestations- becomes scarce.

Conclusion:

Many leaders are doing all they can under the circumstances, but both domestic and international action is required to limit the damage caused by COVID-19.

There is one lesson COVID-19 has taught us, it is how interconnected our lives are. We are only as strong as our weakest links. In the case of COVID-19, if one country is a pandemic hotspot, we are all at risk of reinfection. Now more than ever we must show solidarity with those beyond our borders. Our health depends on the health of others. If we are to look forward to a better future, people elsewhere must too.

Each person who has died of COVID-19 was somebody's everything. Even as we mourn for those we knew, cry for those we loved and consider those who have died uncounted, the full tragedy of the pandemic hinges on one question: how do we stop the next 1,00,000?

We have known from the beginning there are some measures that help protect us from the virus, such as physical distancing, using masks, stock up on home

supplies, medicines and resources, keep your hands clean, wash your hands, so on. Following the government instructions will help us to be safe.

Some positive impacts because of this Coronavirus are Social distancing has improved air quality, reduced carbon emissions and global warming, reduction of environmental noise well.

There is a need for regular educational interventions and training programs on infection control practices for COVID-19 across all healthcare professions. Occupational health and safety are of paramount importance to minimize the risk of transmission to healthcare students and professionals and provide optimal care for patients.

Name: Mr. Sachin Pattar

College: KLE society's Basavaprabhu Kore College Chikodi

Email-ID: sachin@gmail.com

Someone has correctly said that “If health is gone everything is gone”. Health is wealth and nothing is supreme than what our health stands at the present moment. A healthy person lives more happy and peaceful life than any rich person having diseased body.

The WHO has declared that the new coronavirus outbreak, which is originated in Wuhan China, a pandemic. The global death toll surpassed 406,000 amid more than seven million cases. The coronavirus family causes illnesses ranging from the common cold to more severe disease such as respiratory syndrome (SARS). They circulate in animals and some can be transmitted between animals and humans. The new coronavirus, the seventh known to affect humans, has been named COVID-19.

The common symptoms of infection include are fever, coughing and breathing difficulties. In severe cases, it can cause pneumonia, multiple organ failure and death. China alerted the WHO to cases of unusual pneumonia in Wuhan on December 31. COVID-19 is thought to have originated in a seafood market where wildlife was sold illegally. COVID-19 is a new respiratory disease, and is spreading across the world. COVID-19 is now cause a large number of death across the world. Any certified treatment of COVID-19 has not been discovered. It spread very fastly and can also spread through contact with an infected person. The attack of CORONAVIRUS can caught pneumonia, severe acute respiratory syndrome, failure of kidney and also death.

According to the research the Scientist have pointed to either Bats or Snakes as possible sources. COVID-19 is so dangerous, that within few days of its discovery the whole China was shut down to stop or prevent the spreading of Coronavirus.

The great impact of COVID-19 on global economy because according to the WTO china is the biggest exporter and second biggest importer of Merchandise as of 2019. Many industries in other countries are depending on China for many raw material, automobile components, goods such as pharmaceutical ingredients etc. So Coronavirus has hit global supply chains badly. COVID-19 spreads mainly by

droplets produced as a result of coughing or sneezing of a COVID -19 infected person

PREVENTION OF COVID -19 are;

The WHO recommends basic hygiene such as regularly washing hands with soap and water, and covering your mouth with your elbow when sneezing or coughing.

Maintain “Social distancing” keeping at least 1.8meters (six feet) between yourself and others – particularly if they are coughing and sneezing, and avoid touching your face, eyes and mouth with unwashed hands.

Avoid unnecessary, unprotected contact with animals and be sure to thoroughly wash hands after contact . Wear mask , ensure that the surfaces and objects are regularly cleaned etc .

CONCLUSION – As there is no specific treatment for disease cause by a noval coronavirus. People should understand basic information about coronavirus disease. Be aware of fake information or myths that may circulate by online .We all must follow the lockdown rules.

Name: Miss. Seema Dattawade.

College Address: GI Bagewadi Arts, Science and Commerce College Nipani

Mobile no.: 9307056949

Email id: dattawadeseema@gmail.com

Someone has correctly said that “if health is gone everything is gone”. Health is wealth and nothing is supreme than what our health stands at the present moment. A healthy person(whether rich or poor) lives more happy and peaceful life than any rich person having a diseased body. There are number of different routes by which a person can become infected with an infectious agent. A series of novel corona virus disease 2019 caused by SARS-CoV-2. Since the end of 2019 is ongoing and triggering a global public health crisis. The estimated case fatality rate is approximately 3.4% in China.However, some patients experience dyspnea within 1 week and develop rapidly to organ injury and even death within 2 weeks after dyspnea. In addition, early organ injury could lead to higher risks of mortality. “Better to wear a mask than a ventilator; better to stay at home than in an ICU”.

Thus, early identification of patients at risk of organ injury and death is crucial, which saves the patients from classified and invasive treatments, improving clinical outcome and prognosis. The human immune system plays significant roles in the resistance of foreign pathogens and the progress of pneumonia. Recent studies have mentioned that T cells were decreased in COVID-19 patients, excessive activated immune response was caused by pathogenic Th1 cells, and inflammatory CD14+CD16+ monocytes may connect to pulmonary immunopathology, leading to deleterious clinical manifestations and even acute mortality after SARS-CoV-2 infections.The inclusion criteria were age >18 years old and first diagnosis COVID-19. The exclusion criteria were examination without immune related indicators before treatment, pregnancy, taking immunosuppressive drugs or corticosteroids, a history of chronic organ dysfunction or immunological disease, operation history within 3 months, and simultaneous infection with other diseases.

This combined adaptive response may clear the virus from the body, and if the response is strong enough, may prevent progression to severe illness or re-infection by the same virus. The process is often measured by the presence of antibodies in blood. There has also been coverage about developing “immunity passports” which employers can use to let people return to work. While these are all tantalizing

thoughts, the idea of using antibody testing as a true measure of protection is something that requires much more research. As immunologists, our interest is in understanding how the immune system responds to viruses, especially zoonotic viruses that can be transmitted from animals to humans, like SARS-CoV-2. Depending on the type of virus, antibodies in the blood may or may not confer protection against the virus. We can only hope that the antibodies circulating in the blood of patients infected with SARS-CoV-2 are good indicators of protection. People with positive antibody tests may behave as though they are protected against COVID-19 when, in fact, they may or may not be. The death rate caused by the virus after taking into account both confirmed and unconfirmed cases-was 0.66%, the study found. The death rate from confirmed Covid-19 cases turned out to be 1.38%. Estimates that authorities had made so far put the death rate for confirmed cases between 2-8%, and the death rate for overall cases between 0.2-1.6%. The corona virus still has a long way to go. That's the message from a crop of new studies across the world that are trying to quantify how many people have been infected. Official case counts often substantially underestimate the number of corona virus infections. But in new studies that test the population more broadly, the percentage of people who have been infected so far is still in the single digits.

The numbers are a fraction of the threshold known as herd immunity, at which the virus can no longer spread widely. The precise herd immunity threshold for the novel coronavirus is not yet clear; but several experts said they believed it would be higher than 60%. Even in some of the hardest-hit cities in the world, the studies suggest, a vast majority of people still remain vulnerable to the virus. Some countries – notably Sweden, and briefly Britain- have experimented with limited lockdown in an effort to build up immunity in their populations. But even in these places, recent studies indicate that no more than 7%-17% of people have been infected so far. A lower level of immunity in the population can slow the spread of a disease somewhat, but the herd immunity number represents the point where infections are substantially less likely to turn into large outbreaks. The herd immunity threshold may differ from place to place, depending on the factors like density and social interaction. Coronavirus has multiple mutations already. It's doubtful if either the vaccine or herd immunity will grant immunity against all mutations of the coronavirus. Only way is to keep yourself fit and recover fast if you get infected. Mortality rate is increasing day by day. India vis-à-vis 10 most affected countries: U.S., Russia, U.K, Brazil,

Spain, Italy, Germany, Turkey, France, India. India's population is 137 Crore compared to 36.45lakh cases in these countries. India reported 2 lakh cases, compared to 2.73 lakh deaths in these countries, India reported 5,598 deaths. The active cases of the coronavirus disease climbed to 97,581 and as many as 95,526 people have recovered and one patient has migrated, according to the data. Maharashtra tops the list with 2,362 out of the total 5,598 deaths, followed by 1,063 in Gujarat, 523 in Delhi, 358 in MP, and 335 in west Bengal. India has 1,01,497 active cases and 1,00,302 cases were discharged and total death today is 5,815. When a virus attacks its first cell in the body, that cell has two jobs to do before it dies. The infected cell needs to issue a call for reinforcements, sending out a cascade of chemical signals that will activate an army of immune cells to come battle the invading virus. And it needs to issue a warning to other cell around it to fortify themselves, something it does by releasing proteins called interferons. When interferons land on neighboring cells, they trigger those cells to enter defensive mode. The cells slow down their metabolism, stop the transport of proteins and other molecules around their interiors, and slow down transcription, the process by which genetic instructions become proteins and other molecules. “it just keeps replicating in your lungs and all the while you keep calling in for more reinforcements”. In many people, even this crippled immune response is enough to beat back the virus. But for the reasons not yet fully understood, some people enter a vicious cycle. As the virus keeps replicating, the immune army doing its job: attacking infected cells, digesting debris and chemicals spewed out by dying cells, even killing nearby cells in an attempt to staunch the damage. Unfortunately, if the virus continues to penetrate lung cells, this army may do more damage than good. The lung tissue becomes hopelessly inflamed; the blood vessels begin to leak fluids into the lungs; and the patient begins to drown on dry land. This seems to be the reason that some people become severely ill a couple of weeks after their initial infections. Investigation of SARS-CoV-2 so far have suggested, however, that the immune response to the virus also contributes to the devastating effects of the disease in some people. “We do not have any reason to assume that the immune response would be significantly different” from what's seen with other coronavirus. Even as a sudden spike in coronavirus cases threatens to ruin every plan India has made, a new study has come up with new insights for countries stricken by mass hysteria.

The novel coronavirus spread so rapidly that it has changed the rhythm of the globe. Whether from the perspective of a single country or multilateral levels, the solidity of international relations has been put under test. The most obvious consequences include economic recession, a crisis of global governance, trade protectionism and increasing isolationist sentiment. People-to-People, cultural and travel exchanges have all been restricted. Nonetheless, this is just a tip of the iceberg. After we overcome the pandemic, which will surely happen, we must carry out a comprehensive evaluation of the world’s ability to maintain stability when faced with similar challenges in the future. We must also craft measures to cope with these challenges together. But perhaps at the current phase, we can already draw some conclusion. A pandemic is not new in human history. But what makes the COVID-19 pandemic special is that it takes place in an unprecedented backdrop when the interconnectivity and interdependence between people, between countries and between continents are so deep. The achievements people have made in technology, intelligence and transportation make them both physically and psychologically globalized.

“Protect yourself and protect your loved ones”

Name: Miss. Shambhavi Salimath

College Address: B K College Chikodi

Mobile No.: 8105555812

Email iD: Shambushambu917@gmail.com

A novel of coronavirus (COVID-19) was identified in 2019 in Wuhan, china. This is a new coronavirus that has not been previously identified in human. In the wake of the Covid 19 outbreak, entire mankind across the globe is suffering. Enhancing the body's natural defence system (immunity) plays an important role in maintaining optimum health. We all know that prevention is better than cure. While there is no medicine for COVID-19 as a now, it will be good to take prevention measure which boost our immunity in this times. Ayurveda, being the science of life, prostrate the gift of nature in maintaining healthy and happy living. Ayurveda's extensive knowledge base on preventive care derives from the concept of “Dinacharya”- daily regimes and “Ritucharya”- seasonal regimes to maintaining healthy life. It is plant based science the simplicity of awareness about oneself and the harmony each individual can achieve by uplifting and maintaining his or her immunity is emphasized across Ayurved's classical scriptures. In order to spread of Covid -19, it will be crucial to understand exactly how the immune system tackles the disease. Scientists have the basics of the immune system down path. With any new viral infection, the body first deploys T cells, called CD4 and CD8, which find and kill the infected cells. After about a week, the adaptive immune system kicks in, using B cells to make antibodies that can flag sick cells for annihilation even faster. Those antibodies stick around after an infection is over in case of a future invasion. The latest data from Union Health Ministry has confirmed international trends regarding coron virus deaths – that the virus affects the elderly population disproportionately and fatally. However, the age-group analysis of Covid-19 patients in India shows that the maximum 42% are of 21-40 years, 33% of 41-60 years, 17% are above 60 years and 9% are of 0-20 years.

Medical research has show that while people of all ages can be infected by the new coronavirus, older people and people with pre – existing medical condition (such as asthma, diabetes, heart disease) appear to be more vulnerable to becoming severely ill with the coronavirus and dying from it. Senior citizens face the fatal effects of Covid – 19 because one's immune system weakness with age. When the body

becomes exposed to a Covid – 19 ,its faces an even harder time battling it. In elderly population, the body’s ability to prduce white blood cells reduces and their ability to fight pathogens also weaknes.When faced off against one as unique the coronvirus which attacks immune cells, the already lower, weaker WBC count can deplete further.

We have listened with concern to vioce erroneously suggesting that herd immunity may “soon slow the spread “ of COVID – 19. For example , Rush Limbaugh recently claimed that “ herd immunity has occurred in california “ As infectious disease epidemiologists, we wish to state clearly that herd immunity against COVID – 19 will not be achieved at a population level in 2020, barring a public health catastrophe. Although more than 2.5 million confirmed cases of COVID – 19 have been reported worldwide, studies suggested that no more than 2-4 % of any country’ population has been infected with SARS – Cov – 2. Even in hardest by the pandemic, initial studies suggest that perhaps 15-21 % of people have been exposed so far. In getting to that of exposure, more than 17,500 of the 8.4 million people in New York city have died , with the overall deaths rate in the city suggesting deaths may undercounted and mortality may be even higher. Some have entertained the idea of “ controlled voluntry infection,” akin to the “ chickenpox parties “ on the Diamond orincess cruise ship, the mortality rate among these infected with SARS-Cov-2 was 1%.someone who goes to a corona virus party to get infected would not only be substainlly increasing their own chanceof dying in the next month,they would also be putting their families and friends at risk.COVID-19 is now the leading cause of death in united states, killing almost 2000 Americans every day. 8 chickenpox never killed more than 150 Americans in a year. To reach herd immunity foe COVID-19, likely 70% or more of the population would need to be immune. Without a vaccine, over 200 million Americans would have to get infected before we reach this threshold. Put another way, even if the current pace of the COVID-19 pandemic continuous in the united states – it will be well into 2021 before we reach herd immunity. If current death rate will continue, over half a million Americans would be dead from COVID-19 by the time. As we discuss when and how to phase in reopening, it is important to understand how vulnerable we remain. Increased testing will help us better understand the scope of infection , but it clear this pandemic is still only beginning to unfold.

When a virus attacks its first cell in the body, that cell has a job to do before it dies, said Benjamin Tenover, a professor of biology at the Mount Sinai Icahn School of Medicine. The infected cell needs to issue a call for reinforcements, sending out a cascade of chemical signals that will activate an army of immune cells to come battle the invading virus. And it needs to issue a warning to other cells around it to fortify themselves, something it does by releasing proteins called interferons. When interferons land on neighboring cells, they trigger those cells to enter defensive mode. The cells slow down their metabolism, stop the transport of proteins and other molecules around their interiors, and slow down transcription, the process by which genetic instructions become proteins and other molecules. (Transcription is the process that viruses hijack to make more of themselves.) In a study accepted to the journal *Cell*, Tenover and his colleagues found that SARS-CoV-2 appears to block this interferon signal, meaning it messes with the cell's second job – the call for immune system reinforcement work just fine, but the cells in the lungs don't enter defensive mode and so remain vulnerable to viral infection.

The coronavirus SARS-CoV-2 has only been circulating in human hosts for five or six months, which means that there is simply no way to know whether immunity to the disease lasts longer than that. How long the immunity lasts is a big question. “Based on our findings, we can only confirm that COVID-19 patients can maintain adaptive immunity to SARS-CoV-2 for 2 weeks post-discharge,” that Tsinghua's Dong wrote.

Evidence from other coronaviruses suggests that immunity probably lasts longer than that, Vabret said. Along with Mount Sinai colleagues Robert Samstein and Miriam Merad, Vabret led more than two dozen doctoral students and postdoctoral researchers in an effort to review the avalanche of immunology research coming out about the coronavirus in journals and on preprint servers that host scientific papers before peer review. Studies of SARS-CoV-2 proteins and genetics suggest that the virus seems likely to induce a long-term immune response similar to that of other coronaviruses, like 2002's SARS 1, or Middle East Respiratory Syndrome (MERS), which arose in 2012.

Banking on developing herd immunity to fight coronavirus is too large a risk for any nation and only timely interventions can mitigate the spread of COVID-19, Director General of the Council of Scientific and Industrial Research (CSIR) Shekar Mande said. Herd immunity is achieved when the majority of the population becomes

immune to an infectious disease, either because they have become infected and recovered, or through vaccination. When that happens, the disease is less likely to spread to people who aren't immune, because there just aren't enough carriers. Responding to a question on whether it is viable for India to achieve herd immunity, Mande said, "it is too large a risk for any nation." Herd immunity, typically works when 60-70% population of a country has been affected and it's too large a risk to take for any nation. What one would do is to take intervention before so that the infection does not spread," he told PTI in an interview. Mande said several theoretical modelling that people have conducted across the world and also in India seem to suggest that there could be few waves of COVID-19 and people need to be prepared for them. "The number of cases will go down and people need to be prepared as there can be a second wave of COVID-19," he said. On US President Donald Trump terminating the country relationship with the World Health Organisation as he blamed it and China for the death and destruction caused by the COVID-19 pandemic across the globe, Mande said it is not a good sign. India has overtaken Italy as the sixth worst affected country, after another biggest single day rise in confirmed COVID-19 infection. India's official death toll of 6642 is relatively low compared with the other countries, but experts say that the country is still nowhere near its peak and doctors fear what will happen once the imminent monsoon season begins. Despite there being no sign the infection curve flattening, the country will begin opening up on Monday after more than two months of the world's largest lockdown, which has involved 1.3 billion people.

Name: Miss. Shivani Narayanrao Nimbalkar

College Address: K.L.E's G.I Bagewadi college ,Nipani 591237

Mobile No.: 7337607037

Email id: nimbalkarshivani10@gmail.com

Year 2020 has been bad for all human beings so far because of the novel corona virus (covid 19) that has affected nearly 213 countries .This virus is invisible to human eyes and has caused terror in world as there is no vaccine available yet against it.WHO has declared corona disease as a pandemic.it is named for the spikes that protrude from their surfaces ,resembling a crown

Covid _19 originated in wuhan district of china in december 2019 with the first ever death by coronavirus disease on january 11,2020.In India ,first confirmed case was reported in pune on january 30 and first death on march 11.

- ❖ Thus virus is said to be spread from bats or snakes from wuhan sea market.
- ❖ The incubation period of covid_19 is thought to be between 1 and 14 days.
- ❖ People infected with the virus produce tiny respiratory droplets allowing the virus to travel through the air .
- ❖ Symptoms are fever ,cough, breathing problems, pneumonia.

Immunity » It appears to be less fatal than the coronaviruses than causes SARS or MERS.The fatality rate was over 2% in one study but it could vary on immunity system of hosts.White Blood Cells (WBC) or leukocytes are the cells of immune system defending the body against disease by identifying and killing pathogens and tumor cells. The main types of WBC are T lymphocytes, B lymphocytes ,macrophages ,neutrophils. The defense in the 1st week of infection is mediated primarily by macrophages neutrophils and natural killer cells. If the infection is not contained by the 1st week ,the T and B lymphocytes will initiate more specific and strong defense .

- ❖ In serious patients of corona T cells decreases rapidly which are responsible for removal of viruses from body . Scientists are using Interluekin 7 tablets to increase T cells .Britain is conducting tests of Interluekin 7 against covid 19.
- ❖ Hydrochloroquine tablets are approved by many countries as a treatment against coronavirus. These tablets has also been banned as it has many side effects .

- ❖ Antibiotics do not work against viruses as 2019 ncov is a virus so antibiotics is useless against covid19.
- ❖ Children and adolescence under the age of 20 are much likely than adults to become infected by the new coronaviruses.
- ❖ Recovery rate is approximately 2 weeks.

Immune system of Indians is better than others due to 3 reasons namely

1. The broad based immunity of the population due to extensive microbial load and general exposure to a variety of pathogens could prime Indians immunologically for broad specific reactive memory T cells.
2. The second factor is environmental and food habits that may provide some degree of resistance to infection .
3. Extensive HLA diversity of the Indian population with existence of several ‘novel alleles’ and ‘unique haplotypes’

Immunity can be improved by following ways»

- 1.Reduce stress ,do meditation
2. Sleep whenever you are tired .
- 3.Consume Immunity boosting vitamins
- 4.Reduce Inflammation
- 5.Exercise but not too much
6. Stay away from toxics
7. Have proper and healthy diet

Deaths » 57,17,726 people are infected in overall world in which 24,56,320 are recovered and 3,52,983 are deceased(Till May 27)

In India 1,51,767 are infected in which 64,426 recovered and 4,337 are deceased.

In India ,Mortality rate due to coronavirus is 3.29% which is least in world.In Belgium 16.31%, France 14.91% ,UK 14.53% , Italy 13.95%.

Recovery rate in India at right time decreased the threat of cluster of infections and that’s why India is in better situation than America, russia and other countries. Better Immunity System and average age of Indians is also a key factor in such a great number of recovery rates.

- ❖ In world, Mortality Rate rate is 4.5% per lac people. Whereas in India it is 0.3% per lac people .
- ❖ During 1st lockdown recovery rate was 7.1% , 2nd lockdown was 11.42% and 26.49% and 41.61% during 3rd and 4th lockdown respectively.
- ❖ 69.9% people are infected by covid 19 in world whereas in India it is 10.7% per lac population .

To avoid transmission of coronavirus we must follow certain rules given below :

1. Maintain social distancing (1.8 metres distance)
2. Use masks,sanitizers , gloves
3. Wash hands and face at regular intervals .
4. Avoid touching face ,eyes and mouth with unwashed hands

Name: Miss. Shrestha M. Hiremath

Collage Address: Raja Lakhamagouda Science Institute Belagavi

Mobile number: 7795548669

Email- id:shresthahiremath@gmail.com

COVID-19,' CO' stands for Corona, 'VI' for virus and 'D' for disease. Formerly this disease was referred to as 2019 'novel corona virus' or '2019-nCoV'. The COVID-19 virus is a new virus linked to the same family of viruses as severe Acute Respiratory Syndrome (SARS) and some types of common cold.

Brief History:

- COVID-19 was first identified in December 2019 in Wuhan, Hubei Province, China in December 2019 and since spread globally, resulting in an ongoing pandemic.
- It has now been confirmed on six continents and in more than 100 countries.
- On January 12 2020 China publicly shared genetic sequence of COVID-19.
- As of June 1st 2020, more than 6.15 million cases have been reported across 188 countries and territories, resulting in more than 371,000 deaths, whereas more than 2.63 million people have recovered.
- In India first case was reported on 30 January 2020.

Symptoms:

According to Centers for Disease Control and Prevention (CDC) , People may start to experience symptoms from 2-14 days after exposure to the virus. Some of the symptoms may include:

- Fever.
- Chills.
- Cough.
- Shortness of breath or difficulty breathing.
- Congestion or a runny nose.
- Fatigue.
- Headache.
- Muscle pain.
- New loss of taste or smell
- Nausea or vomiting.

IMMUNITY

It means ability of the host to fight the disease causing organisms, conferred by the immune system.

Immune system in the body:

The human immune system consists of lymphoid organs, tissues, cells and soluble molecules like antibodies. Immune system is unique in the sense that it recognizes foreign antigens, responds to these and remembers them. The immune system also plays an important role in allergic reactions.

When the body's immune system encounters a virus, it gets to work producing antibodies that can recognize a particular virus and attack it. And it is commonly thought that once a person catches a virus, immunity makes it impossible to get sick from the same one again.

Response of immune system to Corona virus attack:

A cascade of viral particles enters the body through the nose, eyes or mouth. Breathing carries some of these particles to the lower respiratory tract where the spike proteins of the corona virus, acting like a key lock into epithelial cells that line the respiratory tract as well as those in the air sacs in the lungs. SARS-COV-2 is able to stay undetectable longer than many flu or corona viruses and its spike proteins are able to gain entry by unlocking the ACE2 protein on the lung cells once in, they hijack the cells machinery, replicate and multiply and infect adjoining cells. Like the defining ACE2 proteins on the epithelial cells, viruses too have a telltale signature on their surface called antigens and spotting these is what kicks the immune system into action by producing antibodies.

The signals they generate trigger another class of chemicals cytokines and chemokines and they alert the immune system to send an array of different kinds of cells that specialise in destroying viral particles. However, these cytokines and chemokines trigger inflammation in the cells. In the nose and upper regions of the respiratory system this inflammation produces mucus and a runny nose to trap viral particles and prevent their ingress.

Recovered patients developing immunity:

The duration of immunity depends on how long antibodies remain in the body and how effective they are in the first place to fight off a disease. A study on SARS, another type of corona virus showed that antibodies remained for up to two years but weren't a guarantee against re-infection.

In a New York Times column, Harvard epidemiologist Marc Lipstick said “After being infected with SARS COV-2, most individuals will have an immune response (that) will offer some protection over the medium term at least a year and then its effectiveness might decline”.

If the virus mutates, the immune system may not recognize it and existing antibodies may not be effective.

“Immunity Passports” in the context of COVID-19 WHO has published guidance on adjusting public health and social measures for the next phase of the COVID-19 response. Some governments have suggested that the detection of antibodies to the SARS-COV-2, the virus that causes COVID-19, could serve as the basis for an “immunity passport” or “risk –free certificate” that would enable individuals to travel or to return to work assuming that they are protected against re-infection. There is currently no evidence that people who have recovered from COVID-19 and have antibodies are protected from a second infection

Minimizing the risk of infection and boosting immune system against Corona virus

- Improving diet.
- Not compromising on sleep.
- Staying hydrated.
- Not skipping on exercise.
- De stress yourself.
- Practicing meditation.
- Avoiding smoking, alcohol and other addictive substances.
- Avoiding all kinds of non essential travels.

Covid-19 Deaths

The virus attacks and kills cells in all cases, serious illness will depend on how the immune system responds and that can be influenced by age, gender, genetics and underlying medical conditions. The initial damage caused by the virus can trigger a powerful and counterproductive overreaction by the immune system itself. The

corona virus is spread when an infected person sneezes directly in an another person’s face or expel droplets widely, contaminating surfaces that healthy people touch before unknowingly spreading germs to their mouths or noses.

With infection, the virus probably begins to multiply inside cells lining the airway, which are fringed with hair like structures. Corona viruses that cause common colds are excellent at infecting the upper airway, while SARS tended to go deeper in the lungs. As the corona virus gains strength, dead cells are sloughed off and collect in the airway, making breathing difficult.

As of June 9 2020, 213 Countries and Territories around the world have reported a total of 7,201,136 confirmed cases of the corona virus COVID-19 that originated from Wuhan, China, and a death toll of 408,782 deaths. The first death linked to the disease was reported on January 10 in Wuhan, China. It took 91 days for the death toll to pass 1,00,000 and a further 16 days to reach 2,00,000, according to the Reuters tally of official reports from governments. It took 19 days to go from 200,000 to 300,000 deaths. 3,550,905 cases have been recovered with the rate of 90% and 4,08,975 deaths have been confirmed with a rate of 10%.

In India 2,67,046 cases have been reported and 7,473 deaths have been confirmed and 1,29,215 have been recovered. Recovery rate is at 48% and death rate is at 5%

Name: Miss. Shreya Sunil Ashtekar

Name of the collage: Raja Lakhamagouda Science Institute Belagavi

Mobile number:

E-mail id: shreya.ashtekar007@gmail.com

Immunity is the state of resistance of an organism to invading biotic or abiotic pathogens and their harmful effects that prevents the development of infection and maintains organism's integrity by counter racing, neutralising and clearing pathogens. The immune system is a complex and highly developed system, yet its mission is simple that is to seek and kill invaders. Sometimes a person's immune system does not work properly. This can result from immune deficiencies present at birth. If a person is born with severely defective immune system, death from infection by a virus, bacterium, fungus or parasite will occur. In severe combined immuno deficiency, lack of an enzyme means that toxic waste builds up inside immune system cells, killing them and thus devastating the immune system. A lack of immune system cells is als the basis for DiGeorge syndrome that is improper development of the thymus gland means that T-cell production is diminished.

Most of immune disorders result from either an excessive immune response or an 'auto immune attack'. Asthma, familial mediterranean fever and Crohn's disease all result from an over reaction of the immune system, while auto immune poly glandular syndrome and some facets of diabetes are due to the immune system attacking 'self ' cells and molecules. A key prt of immune system's role is to differentiate between invaders and the body's own cells. When it fails to make this disinction, a reaction against 'self ' cells and molecules causes auto immue disease.

As we age, our immune resonse capabiliity becomes reduced which in turn contributes to more infections and more cancer. As life expectancy in developed countries has increased, so too has the incidence of age-related conditions. Respiratory infections, influenza, the COVID-19 virus and particularly pneumonia are a leading cause of death in people over 65 worldwide. This is because the decrease in T-cells possibly from the thymus atrophying with age and producing fewer T-cells to fight off infection. Whether this decrease in thymus function explains the drop in T-cells or whether other changes play a role is not fully understood.

One of the amazing aspect of the immune system is that it is compensatory, meaning that when one part is weak or non-functional, typically another part can step

in. think of it like a trip to the grocery store. If you need to go to the store, but your tyre is flat, you may go by another method of transportation like walking. The substitute may or may not be efficient, but it still allows you to complete your task. The same is true of the cells and proteins of our immune system. Most “jobs” of the immune system can be done by more than one part of the immune system although some parts are better at certain jobs than others.

The idea of boosting immunity is enticing, but the ability to do so has proved elusive for several reasons. The immunity system is precisely a system, not a single entity. To function well, it requires balance and harmony. The lifestyle has an effect on immune system. The effect of diet, exercise, age, psychological stress and other factors have an effect on immune response both in animals and in humans. Regular exercise is one of the pillars of healthy living. It promotes good circulation, lowers blood pressure, controls body weight and protects against a variety of diseases. In the mean time, general healthy living strategies are a good way to start giving your immune system the upper hand.

The immune response to infectious diseases are an efficient and effective mechanism against the bombardment of pathogens or viruses we face everyday.

Name: Miss. Soujanya Ramesh Hegade

College Address: Govt First Grade Clg Chikkodi

MobileL No: 9353698382

Email Id: Soujanyahegade5@Gmail.Com

The outbreak of coronavirus disease 2019 (COVID- 19) has created a global health crisis that has had a deep impact on the way we perceive our world and our everyday lives. Not only the rate of contagion and patterns of transmission threatens our sense of agency. but the safety measures put in place to contain the spread of the virus also require social distancing by refraining from doing what is inherently human, which is to contain find solace in the company of others. we welcome research addressing media impact and its role during the covid-19 pandemic, in the followings.

- Effective health communication for the adoption of sustainable preventive measures and curtailing misinformation;
- public health communication to increase psychological resources and resilience in distinct age groups and socioeconomic conditions;
- Effective strategies for helping individuals in dealing with social and physical distancing;
- I don't expect such advice to “go viral”-what a newly loaded phrase- but I hope it spreads in support of coverage that takes responsibility for what readers and viewers know and understand. our goal is twofold:
- To give people what they need to make safe decisions about their personal health and the public's health.
- To give readers confidence in their knowledge so they will not be harmed by the type of anxiety.

COVID-19 Indian scientists to develop medicine against.

Exploring new avenues to combat covid-19, Indian scientists with support from India's biggest research council have joined hands with the industry to develop monoclonal antibodies-a new form of medicine-against novel coronavirus.

The national center for Cell Science, Pune and Indian institute of technology, Indore has partnered with PredOmix Technologies, for Gurgaon and Bharat Biotech,

Hyderabad in a collaborative mode the public health emergency.

Can COVID-19 spread that people can contract COVID-19 from food or packaging.
COVID-19 is a respiratory illness and the primary transmission route is through person-to-person contact and through direct contact with respiratory droplets generated when an infected person coughs or sneezes.

There is no evidence to date of viruses that cause respiratory illnesses being transmitted via food or food packaging. Coronaviruses cannot multiply in food; they need an animal or human host to multiply.

Is there treatment for novel coronavirus?

There is no specific treatment for disease caused by a novel coronavirus. However, many of the symptoms can be treated and therefore treatment based on the patient's clinical condition. Moreover, supportive care for infected persons can be highly effective.

What can I do to protect myself?

Standard recommendations to reduce exposure to and transmission of a range of illnesses include maintaining basic hand and respiratory hygiene, and safe food practices and avoiding close contact, when possible, with anyone showing symptoms of respiratory illness such as coughing and sneezing.

Are health workers at risk from a novel coronavirus?

Yes, they can be, as health care workers come into contact with patients more often than the general public. WHO recommends that health care workers consistently apply appropriate.

What WHO recommendations for countries?

WHO encourages all countries to enhance their surveillance for severe acute respiratory infections (SARI), to carefully review any unusual patterns of SARI or pneumonia cases and to notify WHO of any suspected or confirmed case of infection with novel coronavirus. Countries are encouraged to continue strengthening their preparedness for health emergencies in line with the international Health Regulations (2005).

The coronavirus symptoms:

Most common symptoms:

- fever
- dry cough
- tiredness

Less common symptoms:

- aches and pains
- sore throat
- loss of smell
- conjunctivitis
- headache
- loss of taste
- a rash on skin , or dis coloration of fingers or toes

Serious symptoms:

- difficulty breathing or shortness of breath
- chest pain or pressure
- loss of speech or movement

Seek immediate medical attention if you have serious symptoms. Always call before visiting your doctor or health facility. People with mild symptoms who are otherwise healthy should manage their symptoms at home. On average it takes 5-6 days from when someone is infected with the virus for symptoms to show, however it can take up to 14 days.

COVID-19 affects different people in different ways.

Most infected people will develop mild to moderate illness and recover without hospitalization.

About my essay I would say some note :

“The lockdown has made us appreciate our parents, who usually work day and night to fulfill our reasonable (and unreasonable) demands and never complain. Spending more time with them gave us an opportunity to understand them and to learn what quality time is.”

“A new era of gender equality after the coronavirus requires not just the sharing of home and family responsibility between men and women, it also calls for more work and education opportunities for women”.

What causes coronaviruses?

Coronaviruses are zoonotic. This means they first develop in animals before being transmitted to humans.

For the virus to be transmitted from animals to humans, a person has to come into close contact with an animal that carries the infection.

Once the virus develops in people, coronaviruses can be transmitted from person to person through respiratory droplets. This is a technical name for the wet stuff that moves through the air when you cough, sneeze, or talk.

The viral material hangs out in these droplets and can be breathed into the respiratory tract (your windpipe and lungs), where the virus can then lead to an infection.

It's possible that you could acquire SARS-CoV-2 if you touch your mouth, nose, or eyes after touching a surface or object that has the virus on it. However, this is not thought to be the main way that the virus spreads.

Researchers believe that the virus may have been passed from bats to another animal – either snakes or pangolins – and then transmitted to humans.

This transmission likely occurred in the open food market in Wuhan, China.

Who's at increased risk?

You're at high risk for contracting SARS-CoV-2 if you come into contact with someone who's carrying it, especially if you've been exposed to their saliva or been near them when they've coughed, sneezed, or talked.

Without taking proper preventive measures, you're also at high risk if you.

- Live with someone who has contracted the virus.
- Are providing home care for someone who has contracted the virus.

Name: Mr. Umair Ahmed Mantri,

College Address: Anjuman Arts, Science, Commerce College & P.G Studies in English Vijaypur.

Mobile No.: 9986598713,

Email id: umairahmedmantri@gmail.com

ABSTRACT:

- Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.
- Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces.
- While the virus has indiscriminately been deadly for all, certain sections have been more vulnerable to the disease than others. Within the broader ambit of infected and instances of death, it has been noticed that vulnerabilities differ according to age cohorts and co-morbidities. According to data from the Ministry of Health and Family Welfare, more than half of total Covid-19 deaths in India are among those aged above 60 years of age.

INTRODUCTION:

According to data from the Ministry of Health and Family Welfare, more than half of total Covid-19 deaths in India are among those aged above 60 years of age. People with co-morbidities like diabetes, heart disorders, kidney ailments and other diseases have accounted for 78 per cent of total deaths in India.

You can be infected by breathing in the virus if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth.

Symptoms of Covid 19 are :

1. Fever.
2. Dry cough.
3. Tiredness.
4. Sore throat.

5. Diarrhoea.
6. Conjunctivitis.
7. Headache.
8. Loss of taste or smell.
9. A rash on skin, or discolouration of fingers or toes.

This pandemic could act as a starting point for the re-orientation of the primary and district health care systems of Indian states to keep the infections at a manageable level. As India looks to flatten its curve.

Matter:

- ❖ The Covid-19 pandemic has upended people’s lives, leading to a massive death toll across the globe. Similar to other countries, India has also not been able to sidestep the wrath of the virus.
- ❖ with total deaths going beyond 1,700 and confirmed cases nearing the 53,000 mark. In order to combat the spread of infection, the Indian government has taken stringent but necessary policy measures of imposing a national lockdown since 25 March 2020.
- ❖ *India has reported a total of 85,940 cases and 2,752 deaths so far (including 53035 active cases, 30153 cured/migrated).*
- ❖ Individuals in certain pre-existing illnesses like diabetes, hypertension, cardiovascular disease, and respiratory issues are at a higher risk of having Covid 19 complications,
- ❖ With economic activity coming to a grinding halt, people have been trying to stay at home to ride out the adverse effects of Covid-19.

While the virus has indiscriminately been deadly for all, certain sections have been more vulnerable to the disease than others. Within the broader ambit of inflicted and instances of death, it has been noticed that vulnerabilities differ according to age cohorts and co-morbidities. According to data from the Ministry of Health and Family Welfare, more than half of total Covid-19 deaths in India are among those aged above 60 years of age. People with co-morbidities like diabetes, heart disorders, kidney ailments and other diseases have accounted for 78 per cent of total deaths in India. This is because the elderly, in general, have significantly decreased immunity and body reserves, which is exacerbated if there are any underlying health issues.

Ways to Minimize the risk of infection are as follows:

- Improve Your Diet.
- Don't Compromise on Sleep.
- Stay Hydrated.
- Don't Skip on Exercise.
- Particularly vitamin C is a crucial participant in the army of immunity. It helps prevent the common cold.
- Drink warm water throughout the day.
- Practice Meditation, Yogasana, and Pranayama.
- Increase the intake of Turmeric, Cumin, Coriander and garlic.
- Stay at home and avoid social gatherings.

With India's 1.3 billion diverse population representing a multitude of health, economic and social disparities, the added vulnerability factor of Covid-19 presents a unique challenge.

As India moves towards lifting its lockdown and resuming normal operations, it is this vulnerable population that needs protection. Nonetheless, it is easier said than done – understanding the existence and condition of the defined vulnerable group across states would be the first step to creating effective post-lockdown strategies. Additionally, the added intersectionalities of economic and social poverty attached to the elderly and chronically ill population would make it hard for states to have a uniform path to addressing the needs of the vulnerable population. With the future of Covid-19 vaccine still not being an absolute guarantee, government agencies and civil society would have to come together to help quarantine the elderly and those with co-morbidities, in order to limit further Covid-19 deaths and ease the burden on existing health infrastructure.

The puzzle is not just Italian. From the beginning, Covid-19 struck unevenly across the globe, and scientists have been trying to understand the reasons. Why are some populations or sectors of a population more vulnerable than others? Or to turn the question around, why are some groups relatively protected? neuroscientist and Covid-19 modeller Karl Friston of University College London suggested – on the basis of his comparison of German and British data, that the relatively low fatality rates recorded in Germany were due to unknown protective factors at play. “This is

like dark matter in the universe: we can't see it, but we know it must be there to account for what we can see,” he said.

While it is crucial to mention hygiene standards like washing your hands frequently, especially if you have travelled by public transport. Using an alcohol sanitizer, in case you are travelling to disinfect your hands, wearing a mask (cover your nose and mouth) and avoiding touching your hand or mouth. There are also certain methods to improve your immunity which is paramount at this juncture.

CONCLUSION:

Social distancing is mandatory and should be followed at all times. A minimum distance of one metre should be maintained. Face masks are compulsory, hands should be washed frequently using soap and water and alcohol-based hand sanitisers should be used for at least 20 seconds.

In a letter, Union Health Secretary Preeti Sudan said amongst all professionals, the skills and services of these health workers places them in a unique position of saving lives in these times of pandemic.

Name: Miss. Ummehani Salim Jakati

College Address: Kle Society's Basavaprabhu Kore College Chikodi

Mobile No,: 9342345333

Email iD: ummehanijakati@gmail.com

INTRODUCTION:

Immune dysfunction leads to mortality and organ injury in patients with COVID-19 .A series of novel coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) since the end of 2019 is ongoing and triggering a global public health crisis. Some patients experience dyspnea within 1 week and develop rapidly to organ injury and even death within 2 weeks after dyspnea.In addition, early organ injury could lead to higher risks of mortality.

Thus, early identification of patients at risk of organ injury and death is crucial, which saves the patients from classified and invasive treatment, improving clinical outcome and prognosis.

The human immune system plays significant roles in the resistance of foreign pathogens and the progress of pneumonia.Recent studies have mentioned that T cells were decreased in COVID-19 patients, excessive activated immune response was caused by pathogenic Th1 cells, and inflammatory CD14+CD16+ monocytes may connect to pulmonary immunopathology,leading to deleterious clinical manifestations and even acute mortality after SARS-CoV-2 infections.

Therefore, immune dysfunction is very likely to be a risk factor for patients with COVID-19, and immunological profiling may assist in the prediction of organ injury and prognosis in COVID-19 patients. Of 163 patients with COVID-19, 66 (40.5%) patients had severe pneumonia, 25 (15.3%) patients combined pneumonia with MODS, and 27 (16.6%) patients died after they were hospitalized. In those patients, 33 (20.2%), 9 (5.5%), and 6 (3.7%) patients developed acute lung injury, myocardial injury, and kidney injury, respectively. Table S1 shows the baseline characteristics of the patients divided into the survival and death groups.

In total, 113 (69.3%) patients had abnormal cellular immunity, and 58 (35.6%) had abnormal humoral immunity. Patients with abnormal cellular immunity had higher mortality, MODS, and severe pneumonia ($P < 0.001$).

The development of immunity to a pathogen through natural infection is a multi-step process that typically takes place over 1-2 weeks. The body responds to a viral infection immediately with a non-specific innate response in which macrophages, neutrophils, and dendritic cells slow the progress of the virus and may even prevent it from causing symptoms. This non-specific response is followed by an adaptive response where the body makes antibodies that specifically bind to the virus. These antibodies are proteins called immunoglobulins. The body also makes T-cells that recognize and eliminate other cells infected with the virus. This is called cellular immunity.

This combined adaptive response may clear the virus from the body, and if the response is strong enough, may prevent progression to severe illness or re-infection by the same virus. This process is often measured by the presence of antibodies in blood.

WHO continues to review the evidence on antibody responses to SARS-CoV-2 infection.²⁻¹⁷ Most of these studies show that people who have recovered from infection have antibodies to the virus.

However, some of these people have very low levels of neutralizing antibodies in their blood,⁴ suggesting that cellular immunity may also be critical for recovery. As of 24 April 2020, no study has evaluated whether the presence of antibodies to SARS-CoV-2 confers immunity to subsequent infection by this virus in humans.

A team of scientists were able to test blood samples from a patient who had contracted COVID-19 and was hospitalised with moderate symptoms. Researchers in Australia said they had mapped the body's immune response to the novel coronavirus, in a potential breakthrough in the fight against the global killer. The team identified four distinct immune-cell populations in the COVID-19 patient's blood as she underwent recovery. Kedzierska said these were "very similar to what we see in patients with influenza".

These immune system "markers" could in theory predict with greater accuracy which patients are likely to have mild symptoms and which are at risk of dying. The majority of COVID-19 deaths occur in patients who are elderly or have existing medical conditions, such as heart disease and diabetes. Children, on the other hand, appear to show few or no symptoms. Kedzierska said more research was needed to work out why, but the immune system does naturally slow down as people age.

Sharon Lewin, director of the Doherty Institute and one of the world's leading infectious diseases experts, told AFP that the study results were promising.

"It shows that the body makes a very good and powerful immune response to the virus and it is associated with symptom clearing," she said. "Hopefully now we can fish out those antibodies and grow them up to scale," she said.

Now scientists have new evidence that our immune systems do retain various powerful defensive weapons after SARS-CoV2 is cleared. This is critical new information.

It's reasonable to assume most people who've had Covid-19 are less likely to be re-infected, and less likely to get a severe case if they do, says Florian Krammer, a professor at the Icahn School of Medicine at Mount Sinai and co-author of the paper. At this point in the pandemic, there is not enough evidence about the effectiveness of antibody-mediated immunity to guarantee the accuracy of an "immunity passport" or "risk-free certificate." People who assume that they are immune to a second infection because they have received a positive test result may ignore public health advice. The use of such certificates may therefore increase the risks of continued transmission.

What is herd immunity and could it work with Covid-19?

Herd immunity is when a virus can no longer spread easily because enough people are immune to it. That lowers the chances of the virus jumping from person to person and reaching those who haven't been infected yet.

As on April 16, 2020, the WHO pandemic update indicates a whopping 1,991,562 confirmed reported cases globally from nearly 213 countries/areas or territories with 130,885 confirmed deaths

Three factors are worth considering :

- the broad-based immunity of the population due to the extensive microbial load and general exposure to a variety of pathogens could prime Indians immunologically for broad specific and/or cross-reactive memory T-cells, though mechanisms that need to be explored.
- The second and equally important factor is related to environment and food habits that may provide some degree of resistance to infection.

- The third very important factor is the issue of extensive HLA diversity of the Indian population with existence of several ‘novel alleles’ and ‘unique haplotypes’.

CONCLUSION:

People can become immune to certain viruses after surviving infection or being vaccinated. Typically, at least 70 percent of a population must be immune to achieve herd immunity. But how long immunity lasts varies depending on the virus, and it's not yet known how long Covid-19 survivors might have that protection. Say, for example, someone who's infected with a particular virus typically transmits it to two others.

The chances of that person passing it onto others would be lower if half the population is already immune, said Dr. Walter Orenstein, a vaccine expert at Emory University.

The odds of transmission fall further if even more of the population is immune. That could cause new infections to die out.

But if a virus is more infectious, a higher percentage of people would need to have immunity to stop the spread and achieve herd immunity, Orenstein said.

Stay home ; stay safe .

Name: Vasuki Madhavesh Ashrit

College Address: G H College, Haveri

Mobile No.: 8431000389

Email iD: vasukiashrit@gmail.com

1. What is corona virus?

Corona virus is a large family of virus which may cause illness in animals or humans. In Humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as, Middle East Respiratory syndrome (MERS) and Severe Acute Respiratory syndrome (SARS).

2. What is COVID-19?

Covid-19 is the infectious disease caused by the most recently discovered coronavirus. This new virus and disease were known before the outbreak began in Wuhan, China in December 2019. Covid-19 is now a pandemic affecting many countries.

3. What are the symptoms of covid-19?

The most common symptoms of covid-19 are Fever, dry cough and tiredness. Other symptoms that are less common and may affect some patients includes aches and pains, nasal congestion, headache, conjunctivitis, sore throat, diarrhoea, loss of taste or smell or a rash on skin or discoloration of fingers or toes. Those symptoms are usually mild and begin gradually. Some people become infected but only have very mild symptoms. Most people recover from the disease without needing hospital treatment. Around 1 out of every 5 people who gets covid-19 become seriously ill and develop difficulty breathing. Older people and those with underlying medical problems like, High blood pressure, heart and lung problems, diabetes or cancer are at higher risk developing serious illness. However, anyone can catch covid-19 and become seriously ill. People of all ages who experience Fever or cough associated with difficulty breathing or shortness of breath, chest pain/pressure, or loss of speech or movement should seek medical attention immediately if possible it is recommended to call the health care first, so the patient can be directed to the right clinic.

4. How does Covid-19 spread?

People can catch covid-19 from others who have the virus. The disease spreads primarily from person to person through small droplets from the nose or mouth, which are expelled when a person with covid-19 cough, sneezes or speaks. Those droplets are relatively heavy, do not travel far and quickly sink to the ground. People can catch covid-19 if they breathe in these droplets from a person infected with the virus. This is why (it is important to stay at least 1meter) away from others. These droplets can land on objects and surfaces around the person such as tablets, doorknobs and handrails. People can become infected by touching their eyes, nose, or mouth. This is why because it is important to wash our hands regularly with soap and water or clean with alcohol-based hand rub. WHO is assessing ongoing research on the way that covid-19 is spread will continued.

5. How can we protect others and ourselves if we don't know who is infected ?

Practising hand and respiratory hygiene is important at all times and is the best way to protect others and ourselves. When possible maintain at least 1meter distance between ourselves and others. This is a especially important if you are standing by someone who is coughing or sneezing. Since some infected persons may not yet be exhibiting symptoms or their symptoms may be mild, maintaining a Physical distance with everyone is a good idea if we are in area where covid-19 is circulating.

6. What can I do to protect myself and prevent the spread of disease?

Most countries around the world have seen cases of covid-19 and many are experiencing outbreaks. Authorities in China and some other countries have succeeded in slowing their outbreaks. So the situation is unpredictable.

We can reduce our chances of being infected or spreading covid-19 by taking some simple precautions:

- By regularly and thoroughly clean our hands with an alcohol-based hand rub or wash that with soap and water, because using alcohol-based hand rub kills viruses that may be on our Hands.
- Maintain at least 1meter distance between ourself and others because when someone coughs, sneezes, or speaks they sprays small liquid droplets from their nose or mouth which may contain virus. If we are too close, we can breathe in the droplets, including the covid-19 virus if the person has the disease.

- Avoid going to crowded places because, where people come together in crowds, we are more likely to come into close contact with someone that has covid-19 and it is more difficult to maintain physical distance of 1meter.
- Avoid touching eyes, nose, and mouth, because hands touch many surfaces and can pick up viruses. Once contaminate, hands can transfer the virus to our eyes, nose, or mouth. From there, the virus can enter our body and infected the humans.
- Make sure we and the people around us, follow good respiratory hygiene. This means covering our mouth and nose with our bent elbow or tissue when we cough or sneeze. Then dispose of used tissue immediately and wash our hands because droplets spread virus by following good respiratory hygiene., we protect the people around that from viruses such as cold, flu, and Covid-19.

7. Is there a vaccine, drug or treatment for COVID-19?

While some western, traditional or home remedies may provide comfort and alleviate symptoms of COVID-19, there are no medicines that have been shown to prevent or cure the disease.WHO does not recommend self medication with any medicines, including antibiotics, as a prevention or cure for COVID-19. However, there are several ongoing clinical trails of both western and traditional medicines. WHO is coordinating efforts to develop vaccines and medicines to prevent and treat COVID-19?

The most effective way to protect ourselves and others against Covid-19:

- Clean our hands frequently and thoroughly.
- Avoid touching our eyes, mouth, and nose.
- Cover our cough with the bend of elbow or tissue. If tissue is used, discard it immediately and wash our hands.
- Maintain a distance of at least 1meter from others

8. How long does the virus survive on surfaces?

The most important thing to know about coronavirus on surfaces is that they can easily be cleaned with common household disinfectants that will kill the virus. Studies have shown that the Covid-19 virus can survive for up to 72 hours on plastic and stainless steel, less than 4 hours on copper and less than 24 hours on cardboard.

As, always clean our hands with soap and water. Avoid touching our eyes, mouth, or nose.

9. Are antibiotics effective in preventing or treating Covid-19?

No, Antibiotics do not work against viruses; they only work on bacterial infections. COVID-19 is caused by a virus, so antibiotics do not work. Antibiotics should not be used as a means of prevention or treatment of COVID-19. In hospitals physicians will sometimes use antibiotics to prevent or treat secondary bacterial infections which can be a complication of COVID-19 in severely ill patients. They should only used as directed by a physician to treat bacterial infections.

10. How to wear a mask?

- Before touching the mask, clean hands with an alcohol-based hand rub or soap and water.
- Take the mask and inspect it tears or holes.

Deaths in Covid-19

On April 30, West Bengal announced that the 105 Covid-19 positive patients had died but did not count 72 of them as they died due to comorbidities. On May 18, Delhi government asked it is hospitals not to take samples of dead samples of dead people to test for COVID-19, also while the Delhi governments official Covid-19 deaths toll was 68 until May 8, the number of the such deaths in just two hospitals in the city that the Hindu accessed was 107. These Covid-19 specific stories along with the fact that India medically certifies only 22% of deaths (as of 2017) suggest that India may be undercounting its dead.

In 2020 deaths due to Covid-19 increased the exponentially from the 12th week due to the Covid-19 pandemic in 24 countries in Europe. India’s Covid-19 case fatality rate has always remained low. But data from some European and Asian countries show that since the 10th week of 2020. “ Excess deaths ” have surged. In countries with relatively poorer income levels such as Indonesia and Ecuador, a very small % of those excess deaths have been attributed to Covid-19 with historically poor registration of deaths and medically certified death rate is India to undercounting its dead.

Fatality rate

India’s CFR of 3.1% as of the may 18 is among the lowest in countries with more than 1 lakh case and much below the world average of 6.6%. The chart plots cumulative case against the CFR as of may 18.

Excess deaths

The chart shows the weekly excess deaths in 24 countries in Europe from January 1, 2016 to may 15, 2020. In 2020, deaths increased exponentially from the 12th week due to the Covid-19 pandemic. The spike recorded in the first 10-12 weeks of 2017, 2018, and 2019 can be attributed to the flu season which was unusual lethal. In 2020 the flu season was relatively less deadly.

Name: Miss. Vijaylaxmi Veerappa Danannavar

College address: M.Sc. II, Post Graduate Department of Botany

KLE Society's, Basavaprabhu Kore College Chikodi-591 201, Belagavi, Karnataka,
India

Mobile No: 7975703942

Email id: vijaylaxmidanannavar@gmail.com

Introduction

COVID-19 a pandemic disease has created a serious problem on the entire human population in the world. A new (novel) corona virus is mutant form of virus was recorded in the beginning of the December 2019, in the city of Wuhan, China. Since that, it has been named as COVID-19; Coronavirus disease of 2019. Further it has started to spread to different parts of the world within few months. Finally, World Health Organization (WHO) declared Covid-19 is pandemic in March and announced Public Health Emergency of International Concern. Also they have advice to the countries about precautionary and preventive health measures mainly to maintain social distancing, cleanliness etc.

The coronavirus pandemic has turned the world's attention to the immune system, the body's defence force against disease-causing bacteria, viruses and other organisms that we touch, ingest and inhale every day. Until a vaccine is available, our immune systems will need to adapt unaided to COVID-19.

The immune system is the body's multi-level defence network against potentially harmful bacteria, viruses and other organisms.

A healthy lifestyle helps one's immune system to be in the best shape possible to tackle pathogens, but it's better to stop them entering the body in the first place. But what is the immune system exactly, and how does it help repel intruders?

Think of it as the body's personal army working from the cellular to macro level. Each cell, molecule, tissue and organ in this army plays a vital role in warding off invading pathogens, and also helps guard against internal threats like cancer.

The system has two types of response: innate and adaptive.

- ❖ The body’s natural barriers against disease-causing intruders – for example, our skin, the mucous and hairs in our nose, and the acid in our stomachs – are part of our innate immune systems.
- ❖ Adaptive immunity develops over a lifetime of contact with pathogens and vaccines, preparations which help our immune systems to distinguish friend from foe.
- ❖ Vaccination safely teaches our adaptive immune systems to repel a wide range of diseases, and thus protect ourselves and others.
- ❖ There is currently no vaccine for coronavirus, and we may not see one for 18 months or longer. So, for now, our immune systems must adapt unaided to this potentially deadly threat.

A healthy lifestyle -to develop immune system:-

Not smoking, drinking little or no alcohol, sleeping well, eating a balanced diet, taking regular moderate exercise and reducing stress – helps our immune systems to be in the best shape possible to tackle pathogens and prevent infection from entering the body.

The World Health Organization’s (WHO) recommended basic protective measures against COVID-19 are frequent handwashing with soap and water, or cleaning hands with an alcohol-based rub; maintaining social distancing; avoiding touching your eyes, nose and mouth; and covering your nose and mouth with a bent elbow or tissue when you cough or sneeze.

These simple actions or can be also called as COVID-19 etiquettes to prevent the spread of pandemic are vital to slowing the spread of a new disease like the coronavirus – to which nearly everyone is susceptible, but particularly older people and those with underlying health conditions.

"Good health is the harbinger of happiness"

As the world scrambles to find a cure for COVID-19, health experts have suggested boosting the body's immune system may help minimize the affects and hasten the recovery from the disease. Ayurvedic herbs such as tulsi, cinnamon, black pepper, shunthi (dry ginger) and raisins and regular yoga are potent aids to increase the body's immunity against harmful viruses. The usage of turmeric, cumin, coriander

and garlic in cooking, besides taking 10 gm of chyavanprash in the morning. Jaggery, fresh lemon juice too can be helpful in the fight against COVID-19.

Herbs like mrityunjay rasa, sanjeevani vati, tulsi help increase the production of interferons (proteins) and antibodies to generate immune response against viruses and increases the rate of phagocytosis to destroy microorganisms, thus, increasing immunity from containing viral infections.

COVID -19 Deaths:

Since first being recorded late last year in China, the Covid-19 coronavirus has spread around the world, and been declared a pandemic by the World Health Organization. The number of deaths is a more dependable indicator. The disease has hit certain countries, including Brazil, the UK, the US, and the other Asian countries including the India. Meanwhile in Asia, where the disease began, the spread continues, although in China it seems for now to have passed its peak. In Europe most countries have closed schools, and many are in lockdown, in these countries the death rate is devastating the human lives.

According to the current report of WHO the death rate throughout the world is 402,581 and confirmed cases are 7,015,933 . At the same time recovery rates are 2,153,779.

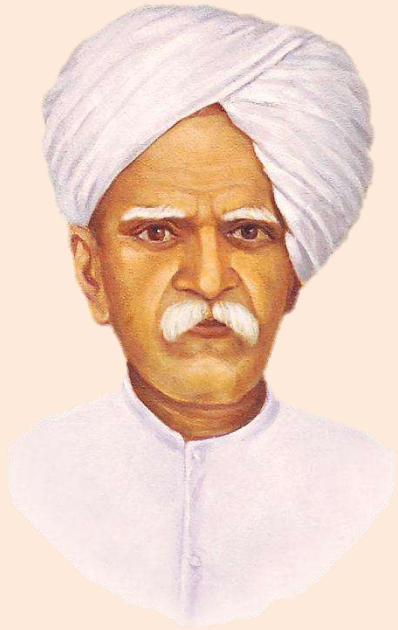
The researchers compared demographic, clinical, treatment, and laboratory data from electronic medical records between survivors and those who succumbed to the disease. The analysis also tested serial samples for viral RNA. This data says that Overall, 91 (48%) of the 191 patients had comorbidity. Most common was hypertension (30%), followed by diabetes (19%) and coronary heart disease (8%). The average age of survivors was 52 years compared to 69 for those who died. This is due to weakening of the immune system and increased inflammation, which damages organs and also promotes viral replication, as explanations for the age effect.

Conclusion :

The total number of coronavirus cases in the India now stands at 2,66,598. There are 1,29,917 active cases and 1,29,215 people have been cured. The death toll has reached 7,466. According to current scenario compared to other world populations, Indian's carry more of a kind of natural immunity hence the death rate due to COVID-19 is low as compared to other countries. It is because India as a

subcontinent have much boon climatic conditions to survive in all aspects. The food habits of Indians also count much in building the great immunity power against most of the pathogens and recently with corona virus too. Ultimately it is clear that having a healthy and traditional habits (in prospective to scientific living) is better way to stay healthy and fit.

Following the guidelines given by WHO and Governments can be helpful along with our self care and concern towards our health. Lastly nothing matters more than a good health," HEALTH IS WEALTH ".



About College.....

KLE Society's Basavaprabhu Kore Arts, Science and Commerce College, Chikodi, a center for excellent learning, was founded in the year 1969 with a vision to provide quality education for the empowerment of the rural youth and to promote human excellence.

Basavaprabhu Kore College is located in the Belagavi District of Karnataka State. The campus is spread over an area of 23.12 acres. We provide education in Arts, Science and Commerce. Besides, the college offers BBA, BCA and PG Course in Commerce and Botany.
