Preface

We would like to present, with great pleasure, the inaugural volume-6, Issue-10, October 2020, of a scholarly journal, *International Multispeciality Journal of Health*. This journal is part of the AD Publications series *in the field of Medical, Health and Pharmaceutical Research Development*, and is devoted to the gamut of Medical, Health and Pharmaceutical issues, from theoretical aspects to application-dependent studies and the validation of emerging technologies.

This journal was envisioned and founded to represent the growing needs of Medical, Health and Pharmaceutical as an emerging and increasingly vital field, now widely recognized as an integral part of scientific and technical statistics investigations. Its mission is to become a voice of the Medical, Health and Pharmaceutical community, addressing researchers and practitioners in below areas

Clinical Specialty and Super-specialty Medical Science:

It includes articles related to General Medicine, General Surgery, Gynecology & Obstetrics, Pediatrics, Anesthesia, Ophthalmology, Orthopedics, Otorhinolaryngology (ENT), Physical Medicine & Rehabilitation, Dermatology & Venereology, Psychiatry, Radio Diagnosis, Cardiology Medicine, Cardiothoracic Surgery, Neurology Medicine, Neurosurgery, Pediatric Surgery, Plastic Surgery, Gastroentrology, Gastrointestinal Surgery, Pulmonary Medicine, Immunology & Immunogenetics, Transfusion Medicine (Blood Bank), Hematology, Biomedical Engineering, Biophysics, Biostatistics, Biotechnology, Health Administration, Health Planning and Management, Hospital Management, Nephrology, Urology, Endocrinology, Reproductive Biology, Radiotherapy, Oncology and Geriatric Medicine.

Para-clinical Medical Science:

It includes articles related to Pathology, Microbiology, Forensic Medicine and Toxicology, Community Medicine and Pharmacology.

Basic Medical Science:

It includes articles related to Anatomy, Physiology and Biochemistry.
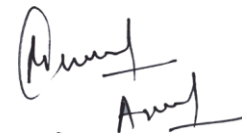
Spiritual Health Science:

It includes articles related to Yoga, Meditation, Pranayam and Chakra-healing.

Each article in this issue provides an example of a concrete industrial application or a case study of the presented methodology to amplify the impact of the contribution. We are very thankful to everybody within

that community who supported the idea of creating a new Research with *IMJ Health*. We are certain that this issue will be followed by many others, reporting new developments in the Medical, Health and Pharmaceutical Research Science field. This issue would not have been possible without the great support of the Reviewer, Editorial Board members and also with our Advisory Board Members, and we would like to express our sincere thanks to all of them. We would also like to express our gratitude to the editorial staff of AD Publications, who supported us at every stage of the project. It is our hope that this fine collection of articles will be a valuable resource for *IMJ Health* readers and will stimulate further research into the vibrant area of Medical, Health and Pharmaceutical Research.

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Research Area: Pediatric Surgery & Laparoscopy.

Table of Contents

Arch Dimensions Changes of Egyptian Orthodontic Patients using Different Orthodontic Archwires: A Prospective Clinical Study

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Abstract—

Objective: The aim of the present study was to make an evaluation of inter-canine width before and after the stage of levelling and alignment in the mandible using three different orthodontic arch wires.

Subjects and methods: Thirty orthodontic patients both males and females were selected and treated by the same researcher. The patients were randomly divided equally into three groups according to the type of wire that was used, so Group A, B and C will be used. Group A, this group included 10 patients treated with (CNA) wire. Group B, this group included 10 patients treated with (Cu NITI) wire. Group C, this group included 10 patients treated with (NITI) wire.

Results: The results showed that inter-canine width showed no significance after the finishing of the leveling and alignment stage.

Keywords: arch, wires, inter-canine, width, orthodontic.

I. INTRODUCTION

Dentofacial aesthetics considered to be the major motivational concern in both adolescent and adult population to go under orthodontic treatment. The number of those patients that conduct orthodontic therapy showed a constant rising over last 2-3 decades. Studies showed that orthodontic treatment produce a proper dental aesthetics also has a great effect on the psychosocial dimension of the patient's life. It has been showed that almost 80% of orthodontic patients accept treatment because of the aesthetic aspect rather than dental health and function.[1]

The most essential part inside the orthodontic treatment is providing a proper aligning for the teeth on the patient's dental arches. Every patient has a unique arch form and arch size. Stability of orthodontic treatment depends on keeping the patient's pre-treatment arch form and arch size during and at the end of treatment.[2]

Multiple years ago, a high attention was applied to the arch form; the Bonwell-Hawley pattern identified by Chuck GC was one of the traditional ideal arch forms that used to create arch wires. Nowadays, multiples diagrams were created through using different mathematical formula to obtain arch wires that are similar in size and form to normal dental arches and to help the orthodontists during treatment.[3]

Dental arches have a variation among races and populations. Hence, the arch wires should be chosen according to the related population's arch's shape and size. In a study of American patients by Braun *et al.*, thirty-three preformed nickel-titanium wires were compared with normal dental arches. They found that the inter-canine and inter-molar widths of upper and lower preformed arch wires were greater than

the average dental arch widths in almost their entire sample. Similar results were achieved by another study conducted in India.[2,4]

Introducing nickel-titanium (NiTi) alloys has create a revolution in the world of orthodontic wires and convert the dream of applying continuous and constant forces into reality. Multiple Enhancements were applied in producing austenite active (super-elastic) and martensite active (heat-activated) NiTi wires to benefit from the extraordinary super-elasticity and shape memory properties of NiTi alloys. NiTi wires with copper (CuNiTi) grew commercially in the mid 90's and were produced in three transition temperatures, one of which was super-elastic (CuNiTi 27ºC) and two heat activated (CuNiTi 35ºC and CuNiTi 40ºC). As it mentioned this type of wires contain copper, which is efficient heat conductor, due to that those wires displayed a proper defined transition temperature.[5]

In spite of the availability of different brands of arch wires in Egypt, only a few of them can be used safely to avert post treatment relapse. From that concept this study focused on evaluation of the inter-canine width of the mandible using copper-niti orthodontic arch wire.

II.   SUBJECTS AND METHODS:

The present study is randomized clinical study. The unit of analysis and randomization is the individual patient. This study was conducted on patients seeking orthodontic treatment in the outpatient clinic, Faculties of Dental Medicine, Al-Azhar University, Cairo, Boys and girls Branches. Thirty orthodontic patients both males and females were selected and treated by the researcher. The patients were randomly divided equally into three groups according to the type of wire that was used, as group A included 10 patients treated with (CNA) wire, group B included 10 patients treated with (Cu NITI) wire, and group C included 10 patients treated with 10 patients treated with (NITI) wire.

2.1   Eligible patients will be selected according to the following inclusion and exclusion criteria:

2.1.1   Inclusion criteria:

➢ The patient age is ranged from 14 to 20 years.
➢ Good oral and general health with absence of any nutritional problems.
➢ No systemic diseases or chronic illness that might affect normal growth.
➢ Absence of any growth abnormality and bone metabolic disorders.
➢ The patient should have a permanent dentition.
➢ The patient should have not any type of abnormality or disease that may affect the bone.
➢ The patients should have no systemic or genetic disease that could interfere with orthodontic treatment.
➢ The patients should have minimal to moderate crowding.

2.1.2   Exclusion criteria:

➢ Patients with retained deciduous teeth.
➢ Uncooperative patients who miss two successive appointments.
➢ Uncooperative patients who do not follow the operator's instructions.
➢ Patients who will need extraction one or group of teeth as a part of orthodontic treatment.

As part of the procedure for treatment of patients in the outpatient clinic of the Orthodontic Department, standard records will be taken including orthodontic study models, intra and extra oral photography, panorama, and lateral cephalometric radiographs. The records were taken before and after the treatment except the intra and extra oral photographs, they were taken before, during and after the treatment. A CBCT of the mandible will be taken before orthodontic treatment and after completing the aligning of the teeth of the lower arch.

All teeth were cleaned with water and fluoride-free pumice for at least 30 seconds and then dried with an oil-free air syringe. The enamel was then etched for 30 seconds with 37% orthophosphoric acid **(etching gel, 3M, Monrovia, CA, USA)**, and the Primer **(Transbond XT, 3M, Monrovia, CA, USA)** was applied with a small brush and spread with oil-free compressed air (figure.1). The composite **(Transbond XT, 3M, Monrovia, CA, USA)** was applied on the bracket base, and the attachment was positioned on the tooth surface. Composite excess was removed by using a probe before polymerization. The composite was polymerized with a LED lamp **(Opticore L3; MarslevByvej, Denmark)** for 80s per bracket (20 s for every side: mesial, distal, occlusal and gingival). Then the wires (figure.2) get loaded and ligated using elastic ligatures. In group A, CAN wires**(Ortho organizers inc, Carlsbad, CA)** had been loaded, in group B copper niti wires **(Henry Schein® Orthodontics)** had been loaded, and in group C niti wires loaded **(Ortho organizers inc, Carlsbad, CA)**. The sequences of wires that it's loaded those sizes had used 0.014", 0.016", 0.018" and 0.016*0.022".

FIGURE 1: Composite, primer and bracket used.

FIGURE 2: NiTi, CNA, Cu-NiTi wires.

In the present study it was designed to evaluate inter-canine width of the mandible. Consequently, the patient had two CBCT on the mandible, the first one was pre-orthodontic treatment and the second one was after completing the stage leveling and aligning of the teeth. The scans were obtained from I-Cat scanner (Imaging Sciences, Hatfield, PA, USA) under fixed parameters (120 KVP, 37 mA, and 0.25 μm in 26.9 seconds) with amorphous silicon flat panel detector. Field of View (FOV) was adjusted separately for each human mandible according to its size and dimension.

Each CBCT scan was assessed separately by inserting their DICOM files (Digital Imaging and Communication in Medicine) into Invivo dental software version 5.2 (Anatomage Inc., San Jose, CA) to perform the study measurements. To standardize the measurements, each scan was superimposed on its corresponding scan by point registration so that assessment can be done on the same cut for all the scans of the same patient, inter-canine width measurements done by using cups tips respectively. Then the same measurement was taken again at the same exact point (figure.3) by transitioning to the superimposed post-operative scan.

FIGURE 3: Pre and post measured inter-canine width.
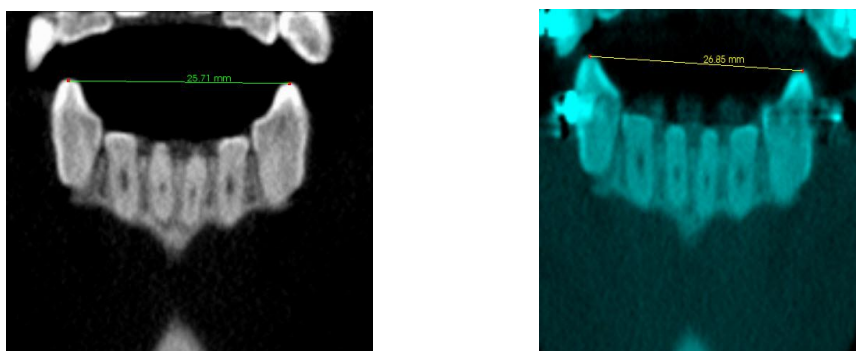
2.2   Ethical considerations

Ethical consideration had been taken from the Ethical committee in the faculty of medicine, Al-Azhar University in Egypt.

III.   RESULTS

TABLE 1

SOCIO-DEMOGRAPHIC DATA AMONG 30 PATIENTS SEEKING ORTHODONTIC TREATMENT

Variables		Frequency (%)
Age (years)		17.2 ± 1.76*
Gender	Female	19 (63.3%)
	Male	11 (36.7%)

* Mean ± SD.

TABLE 2

COMPARISON BETWEEN THE 3 GROUPS AS REGARDS SOCIO-DEMOGRAPHIC DATA USING ANOVA AND CHI SQUARE TESTS.

Variable		CNA group (10)	Cu NITI group (10)	NITI group (10)	ANOVA test
		Mean ± SD	**Mean ± SD**	**Mean ± SD**	**P value**
Age (years)		17.6 ± 1.6	16.8 ± 2.1	17.4 ± 1.5	= 0.588
Variable		**CNA group (10)**	**Cu NITI group (10)**	**NITI group (10)**	**Chi square test**
					P value
Gender	Female	6 (60%)	6 (60%)	7 (70%)	= 0.8663
	Male	4 (40%)	4 (40%)	3 (30%)	

ANOVA: analysis of variance.

Comparative study between the 3 groups revealed non-significant difference as regards age and sex of the patients (p > 0.05).

TABLE 3

COMPARISON BETWEEN THE 3 GROUPS AS REGARDS PRE-TREATMENT DATA USING ANOVA TEST.

Variable	CNA group (10)	Cu NITI group (10)	NITI group (10)	ANOVA test
	Mean ± SD	Mean ± SD	Mean ± SD	P value
ICW (mm)	26.57 ± 1.4	26.2 ± 1.6	27.4 ± 2.2	= 0.313

ICW: Inter Canine Width, ANOVA: analysis of variance.

Comparative study between the 3 groups revealed non-significant difference as regards pre-treatment ICW (p > 0.05).

TABLE 4

COMPARISON BETWEEN THE 3 GROUPS AS REGARDS POST-ALIGNING STAGE DATA USING ANOVA TEST.

Variable	CNA group (10)	Cu NITI group (10)	NITI group (10)	ANOVA test
	Mean ± SD	Mean ± SD	Mean ± SD	P value
ICW (mm)	28 ± 1.86	27.7 ± 1	28.45 ± 1.7	= 0.598

ICW: Inter Canine Width, ANOVA: analysis of variance.

Comparative study between the 3 groups revealed non-significant difference as regards post-aligning stage ICW (p > 0.05).

We further analyzed and compared all 30 (paired) patients according to the serial (ICU) (pre and post-aligning stage); with entering a grouping factor **(CNA, Cu NITI or NITI)**; data are shown in the following tables & figures:

TABLE 5

COMPARISON BETWEEN THE 3 GROUPS OF PATIENTS AS REGARDS ARCH INTER-CANINE WIDTH USING REPEATED MEASURES ANOVA TEST (3-FACTOR STUDY):

Variables	Repeated 2 measures ANOVA (2-F: between the 2 groups)	
	F ratio	P value
ICW (mm)	0.99	0.386

ANOVA: analysis of variance, 3-F: 3-factor study. #logarithmic transformation was done to non-parametric data.

We found increase in ICW in all the 3 groups; with non-significant difference between them; during the serial pre- and post-aligning stage measurements.
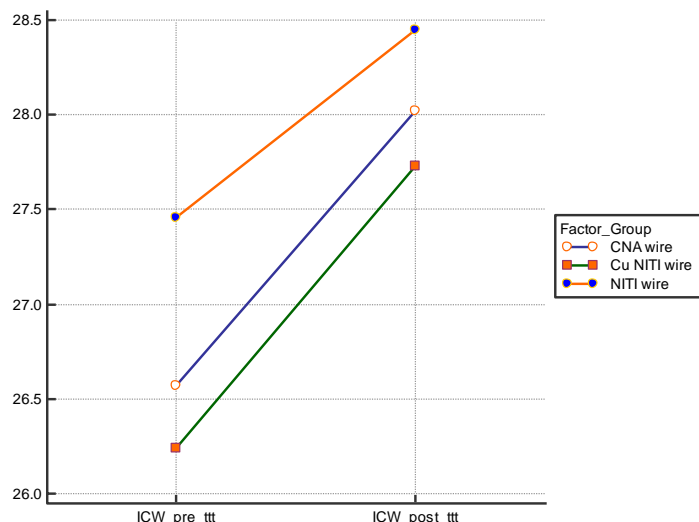
FIGURE 4: Comparison between the 3 groups of patients regarding serial ICW assessments.

TABLE 6
IMPACT OF GENDER ON POST-ALIGNING STAGE EFFICACY OF EACH WIRE USING STUDENT'S T TEST.

Variable	Females (CNA group) (6)	Males (CNA group) (4)	Student's t test
	Mean ± SD	Mean ± SD	P value
ICW	27.9 ± 1.12	28.1 ± 2.88	= 0.869
Variable	Females (Cu NITI group) (6)	Males (Cu NITI group) (4)	Student's t test
	Mean ± SD	Mean ± SD	P value
ICW	27.6 ± 0.9	27.85 ± 1.39	= 0.790
Variable	Females (NITI group) (7)	Males (NITI group) (3)	Student's t test
	Mean ± SD	Mean ± SD	P value
ICW	28.6 ± 1.9	27.9 ± 1.09	= 0.587

Regarding the entire group, gender had non-significant effect on the inter-canine width.

IV. DISCUSSION

The present study focused in evaluating the changes that it happened in the inter-canine width before starting the orthodontic treatment and after finishing the leveling and aligning stage. The rate of success of orthodontic treatment of malocclusions depends on accurate diagnosis and the formulation of a treatment plan that involve both the active and retentive phase of treatment, hence, preserving the position of the teeth of the orthodontic patient that attained by treatment appears to be the most complicated task of the orthodontic profession. Consequently, many theories and schools of thought have been proposed with regard to treatment goals, objectives and limitations.[7]

The main focus of the present study is the evaluation of the inter-canine width of the mandible, which it will influence the rate of the stability of the mandibular arch. Multiple factors though to play an important part in the influencing the changes that it may happen in the inter-canine width, such as using different orthodontic arch wire, presence of cleft palate, and the treatment plan if it will include extraction or non-extraction approach. Consequently, it difficult to obtain a direct comparison between the findings of this study and other study that focused on evaluation the stability of the arches by assessing the inter-canine width.

The results of the present study showed that there is no significance between the inter-canine width in the three groups before and after the leveling and aligning stage. Also, the gender showed a non-significant effect on the inter-canine width in the mandible. Those findings may come back to the rapprochement of the arch form of the mandible between the Egyptian and European population.

The mean of the inter-canine width in three groups showed an increase, for example the mean of CNA group was (26.57 ± 1.4) before starting the treatment, then it changed to be (28 ± 1.86) in the end of the leveling and alignment stage. Despite that there is a real increase but it's non-significant. Also The impact of gender seems to have no impact on the findings of this study; this also may come back to the close rapprochement and similarity between the shape, form, and width of the mandible of Egyptian population and other populations from different nations.

Motamedi AK et al[7], conduct a study to determine the pattern and amount of change exhibited in mandibular inter-canine and intermolar width during treatment and assessing its stability1-3 years post-retention, the study included three groups (extraction, non-extraction, and control group). They found in contrast to both treated groups, inter-canine width of the control group predominantly decreased between 12 and 15 years of age and either continued to decrease or were maintained between 15 and 18 years of age. The loss in mean inter-canine width during the first phase was 0.22 mm and 0.28 mm in the second phase, whereas a mean total loss of 0.5 mm. When comparing the control group with the treated groups, it is interesting to note that, unlike the control group, the mean inter-caninne width of the non-extraction group increased 1.18 mm during treatment. Also, this come in disagreement with the results of this study, this disagreement may come back to multiple differences in the study design and in observation methods, as the present study used a cbct.

Aiyesha Wahaj et al.[8] performed a study to evaluate the difference of arch dimensions through inter-canine and intermolar between patient with cleft lip palate and normal class I occlusion patient group. They found that in mandibular arch, only inter-canine width has showed significant difference between cleft and normal occlusion class I group. These finding come in disagreement with the findings of the present study, this disagreement may come back to multiple factors like methodological and study design differences. As the present study considered being a prospective clinical study while that study considered to be a cross-sectional analytic study.

AA Oz et al.[9] performed a study to compare the arch width changes in patients treated fixed orthodontic mechanics without extraction (Group 1), with upper and lower first premolar extractions (Group 2), and with upper first premolar extraction only (Group 3). They found that Anterior, middle, and posterior arch widths increased significantly in Groups 1 and 3. Maxillary anterior and middle arch widths also increased in Group 2, but the increases were not statistically significant. These findings come in agreement with the results of the present study.

Declan et al.[10] found in his study that orthodontic management provide an increase in the maxillary canine and a decrease in the mandibular canine widths, as these findings come in disagreement with the results of our study, since the present study found that there is an increase in the inter-canine width after leveling and aligning stage but it's not significant. This disagreement may come to some difference in methodological criteria and study design. However, Declan showed that Sex had no significant influence on the results of the study.

The present study didn't take a focus on the extraction cases, as the main focus on non-extraction cases. For years, the use of extraction therapy in orthodontic treatment of malocclusions has been discussed with both the pro- and anti-extraction groups arguing the case for their treatment plans. Some authors such as Bishara et al. have concluded that extraction groups and non-extraction groups show similar overall trends in some width parameters (inter-canine) and different trends in other parameters (intermolar). Bishara et al. went on to conclude that the extraction/nonextraction decision on the basis of good diagnostic criteria does not have a detrimental effect on the facial profile.[10-12]

Lee[13] stated that extraction will minimize arch width and the inclusion of teeth, eg, by orthodontic inclusion of a previously excluded tooth, will increase arch length and leads to a potential increase in arch width. More recently, in 2003, Gianelly[14] reported mandibular inter-canine dimension to be 0.94 mm larger in the extraction sample than the non-extraction sample. In this study, the results of the analysis adjusting for extraction were inconclusive and require further study. Consequently, for more reliable results we focused the present study on non-extraction cases.

V. CONCLUSION

There is no significant change between the inter-canine width before and after the stage of leveling and alignment. Also, the gender has no significant effect in the changes of the inter-canine width before and after leveling and aligning stage.

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Social Stigma and other Consequences of COVID-19 Pandemic in Low Resource Setting, in Eastern Africa: Need to Increase Preventive Efforts and Addressing the Consequences, 2020

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Abstract— Since the emergency of COVID-19 pandemics, many countries have been encountered a multitude of challenges. People have been facing health related and other social consequences throughout the world. It is too early to know the aggravated impact of COVID-19 on people living in resource-limited setting, like east Africa countries. In these countries, besides direct public health impact, the COVID-19 pandemic has provoked social stigma and discriminatory behaviors against people of certain ethnic backgrounds as well as anyone perceived to have been in contact with the virus. Social stigma can negatively affect those with the disease, as well as their caregivers, family, friends and communities.COVID-19 pandemics have also been provoked great impacts on daily social consumptions such as food and other food supplements. In addition, COVID-19 pandemic were overshadowed endemics diseases such as malaria, TB and HIV related care and antenatal care services as well as other non-communicable diseases prevention and control. Social stigma coupled with other consequences could result in more severe health problems, can undermine social cohesion and prompt possible social isolation of groups, which might contribute to a situation where the virus is more, not less, likely to spread and difficulties controlling a disease outbreak. Therefore, how we communicate about COVID-19 is critical in supporting people to take effective action to help combat the disease and to avoid fuelling fear and stigma. An environment needs to be created in which the disease and its impact can be discussed and addressed openly, honestly and effectively. This is a message for government, media and local organizations working on the COVID-19 infections.

Keywords— COVID-19, Social consequence, Resource - limited setting, Africa.

I.   INTRODUCTION

With the emergency of new corona virus strain (COVID-19), various symptoms such as pneumonia, fever, breathing difficulty, and lung infections are the main heath problems worldwide [1, 2]. Since December 2019, cases of pneumonia of unknown etiology have been confirmed in Wuhan city, Hubei Province, China. As the 2019-nCoV is a newly identified pathogen responsible for the outbreak of the pandemic disease, there is no sufficient evidence to reveal the whole nature of this virus [3-6].

Starting March 2020, the WHO detected community transmission in some African countries (including Ethiopia) and the risk to spreading COVID-19 is due in large part to deep challenges in practicing social distancing and frequent hand washing in settings of high population density and lack of running water, as well as the non-specific symptoms of covid-19 that make it difficult to differentiate from endemic illnesses such as pneumonia, malaria and influenza [7-10].

It became clear that the COVID-19 infection occurs through exposure to the virus, and both the immune suppressed and normal population appears susceptible. There are some groups that are at higher risk of getting very sick from the disease. This includes older adults and people who have serious medical conditions, such as heart, lung, or kidney disease, or diabetes [10,11]. In addition, various adverse conditions like overcrowding, extreme climatic condition, pollution and shared accommodation could increase the risk of spread and transmission of COVID-19 infection. Africa is particularly susceptible because 56 percent of the urban population is concentrated in overcrowded and poorly serviced slum dwellings (excluding North Africa) and only 34 percent of the households have access to basic hand washing facilities [12]. The virus can spread when people are in close contact with one another, through coughs and sneezes. A person can also get the virus by touching surfaces where the virus is and then touching their mouth, nose or eyes. Still, research is underway to understand more about transmissibility, severity, and other features associated with COVID-19.

II.   SOCIAL STIGMA AS CONSEQUENCES OF COVID-19 PANDEMIC

Social stigma in the context of health is the negative association between a person or group of people who share certain characteristics and a specific disease [13]. In an outbreak, this may mean people are labeled, stereotyped, discriminated against, treated separately, and/or experience loss of status because of a perceived link with a disease. Such treatment can negatively affect those with the disease, as well as their caregivers, family, friends and communities. People who don't have the disease but share other characteristics with this group may also suffer from stigma.

The current COVID-19 outbreak has provoked social stigma and discriminatory behaviors against people of certain ethnic backgrounds as well as anyone perceived to have been in contact with the virus. Prejudice against those affected by the virus, including frontline health workers and Diaspora communities and their families, is contributing to stigmatization across country and discouraging people from seeking healthcare if they develop symptoms[13, 14].

Several rapid assessments carried out by Save the Children in April, along with increasing anecdotal reports from staff indicate that, misinformation around how COVID-19 spreads is a concerning barrier to reducing infection rates of the disease [15]. The assessments found that: In Somalia of more than 3,000 people surveyed, 42% of respondents said they believed COVID-19 was a government campaign and around three quarters said that while they had heard of the virus, they did not feel they knew enough about it and 27% felt COVID-19 generated a stigma against specific minority groups in their community. Of these 32%, also felt it stigmatized all foreigners [15].

In Tanzania, an assessment of 121 people revealed that, 86% thought that COVID-19 generates stigma against particular groups [15]. In Zambia, a rapid assessment of 400 people found that while 57% of participants expressed an accurate understanding of how COVID-19 is contracted, most respondents had been exposed to inaccurate information, with 69% incorrectly saying that daily tooth-brushing prevented COVID-19. It also found that 43% believed that drinking alcohol could prevent transmission [15]. These findings reflect recent findings from the Africa Centre for Disease Prevention and Control, which found that while COVID-19 awareness is high across the continent, significant misconceptions exist. These include 55.8% of people believing that you should avoid people who have recovered from COVID-19 to prevent the spread of the disease.

Save the Children fears that people who have had COVID-19 and their families could be at risk of similar levels of stigmatization as those seen during the 2014-16 and 2018 Ebola outbreaks on the continent. During those epidemics, several people who had recovered from Ebola and their families were expelled from their community, and humanitarian workers were attacked. In addition, some children who lost parents to Ebola were reportedly shunned by their community and ended up living on the streets. Save the Children is also concerned about the longer-term impact of misinformation and COVID-19 stigmatization, including the potential breakdown of social cohesion and trust within communities [15].

"There is a deep-seated misunderstanding of the unknown that we are currently experiencing, and that's driving a stigma attached to COVID-19," says Lochandra Naidoo, President of the South African Federation for Mental Health, in an interview with *SciDev.Net* last week (16 April). In addition, according to Matshidiso Moeti, WHO Regional Director for Africa, at least 50% of people with depression do not receive treatment and in Africa the lack of information, stigma and cultural issues are significant barriers that prevent people from seeking help [16].

III.   CONSEQUENCES OF STIGMA

Misinformation and myths about COVID-19 could delay the introduction and uptake of measures designed to slow and mitigate the spread of disease, which could see it spread faster, moving silently and hidden in communities. When communities receive the wrong information about an illness, it creates fear – in this case of others – and fear can lead to stigma, isolation, poorer health outcomes on individual and societal levels, and in some cases, violence. There is a worrying lack of counseling for people in isolation. We have already heard of cases where people are afraid to return to their communities because they fear being targeted as potential COVID-19 carriers. We have already heard of cases where, around 20 years old girl from Arba-Minch, Ethiopia, suicide herself in quarantine room due to fear of social stigma. In addition, we have already heard that, around 16 people who have had exposure history around northern Shewa were hidden themselves despite of their COVID-19 result was positive. Furthermore, a 20 years man was leaved from Addis Ababa quarantine to his family area, Wolayita zone after he knows as he is COVID-19 positive. This can result in more severe health problems, can undermine social cohesion and prompt possible social isolation of groups, which might contribute to a situation where the virus is more, not less, likely to spread and difficulties controlling a disease outbreak.

In African governments should create isolation facilities that support mental health needs with clinicians, clergy and the mental health community. According to one study, Africa has 1.4 mental health workers per 100,000 people compared to a global average of nine workers [16]. This is particularly concerning for a region where there is already a shortage of skilled caregivers. Saths Cooper, president of the Pan-African Psychology Union said that, "There are poor health systems in general on the continent, and that pushes mental health to the lowest order on the spectrum," he says. "The result is a lack of education and preparedness in order to identify and deal with mental health issues during a crisis". This also compounded by pandemic-driven restrictions on daily life including social distancing and lockdowns, there is little chance people will be unaffected, says Cooper [16]. Ncebakazi Willie, a 27-year-old survivor of COVID-19 in a rural community in the Eastern Cape of South Africa, tells *that*", I was having an emotional breakdown, and it affected me and my family. People started calling my son 'corona kid' and they called my house 'corona house' [16].

In Cameroon, Yap Boum, an epidemiologist in Yaounde, said, "Many people prefer to keep to themselves when they develop symptoms. Some have died because they delayed seeking medical treatment for fear of being associated with the virus" [17]. Caregivers in particular are often treated like "plague victims", Boum said, Cameroonian nurses have been left by their husbands, driven out of their homes because they were working in Coronavirus units, said Laure Menguene Mviena, who heads a psychological response unit for COVID-19 patients in Yaounde.

IV. CONSEQUENCES OF COVID-19 PANDEMIC ON DAILY SOCIAL CONSUMPTIONS

Many Africans countries including Ethiopia, the most segments of the population becoming insecure with regard to day to day consumptions of food as a consequence of COVID-19 pandemic [18-20]. About 26 million people in Ethiopia live below food poverty line and at least 23 million lives below absolute poverty line (proportion of people that cannot afford to buy a basic basket of goods)[21]. People in most African countries get their day to day consumptions of food by their daily work. In a region where roughly 8 out of 10 people are engaged in low-wage informal employment and often just making ends meet, the livelihoods, incomes and well-being of many households, and their human capital, are at risk [22]. There will be widespread loss of income which leads reducing day to day consumptions of food.

In urban areas, it is expected that there will be a rise in the price of key commodities, driven largely by behavioral changes in urban areas – food hoarding, etc. Particularly, food price hikes will have a considerable impact on vulnerable and poor urban households. There will be widespread loss of income and deeper levels of poverty as social distancing intensifies. For instance, one study in rural area of Sierra Leone showed that, almost all households responded reduction in weekly income by (50-100%), difficulties in providing food for family members by (82%), and anxiety (60%) [23]. The combination of labour constraints and limited access to markets will drive poverty and exacerbate food insecurity. Loss of income especially for those engaged in informal operations where women are over-represented is likely [23].

The COVID-19 pandemic began to impact African economies heavily and destroys livelihoods as well before it reached the shores of the continent. The Government of Ethiopia has also revised its growth rate estimates from 9 % to 6.2% in the best-case scenario and to 5.2% in the worse-case scenario in 2020 [24]. Following the outbreak of Corona Virus, Tourism Sector, Manufacturing Sector, Micro, Small, and Medium Enterprises (MSME"s) Sector, Banking Sector, Insurance sector, Tax administration, The Service Sector, Export and Remittance and etc are among the highly affected business sectors which naturally requires human mobility, and close social interaction [25].

The consequences include reduction in hotels occupancy rate from 80-85% to less than 5%, halting of transportation particularly international air travel, loss of market by connecting service providers in the tourism sector, ceasing of financial service providers linked to the industry, and the change in behavior of employees and customers. For instance, apparel and leather sub-sectors are expected to lose market demand by 25%, beverage industry by 10% and construction (most of small and medium) by 25% [25]. The current emergency could contribute to the rise in inflation, and instability of the exchange rate. For example, increase in prices due to reduced offers will mostly affect lower-income families and older people in society [25]. UNICEF Ethiopia's internal shows that between 0.4-1.2 million addition people, about half of which are children, can enter into poverty [14].

V.   LIMITED HEALTH CARE VISITS ASA CONSEQUENCES OF COVID-19 PANDEMIC

Approximately 600 million Africans (43.6%) live in urban areas, of which 56 per cent live in slums. Many African urban households live in a single room, do not have potable water or reside in over-crowded neighborhoods [12]. Since COVID-19 pandemic, especially, antenatal care services, TB and HIV related care; other non communicable cases were overshadowed with COVID-19 pandemic. For instance, the coronavirus pandemic is overshadowing this year's World Malaria Day (April 25) in Africa, despite malaria's much higher death toll across the continent. Health experts agree COVID-19 – the disease caused by the coronavirus - must be stopped from overwhelming already weak African health care systems; but, they worry the focus on the infection could roll back progress against malaria [26, 27]. In addition, blood donation activities were reduced fear of COVID-19 infections. Most people limit their healthcare facility visits and they preferred taking antibiotic from local drug venders. As the pandemic exacerbates the burden on already weak health systems in Africa, there is a vital need to ensure that existing health services are protected, not just repurposed, for COVID-19 [27].

VI.   THE WAY FORWARD TO REDUCE SOCIAL CONSEQUENCES RELATED TO COVID-19

To curb the spread of COVID-19, WHO has implemented several public health measures including rapid identification, diagnosis and management of the cases, identification and follow-up of contacts, infection prevention and control in health care settings, implementation of health measures for travelers, awareness rising in the population, and risk communication [28]. Immediately expand surveillance to detect COVID-19 transmission chains, by testing all patients with atypical pneumonias, conducting screening in some patients with upper respiratory illnesses and/or recent COVID-19 exposure, and adding testing for the COVID-19 virus to existing surveillance systems is essentials. Hence, to prevent the divesting health, social and economic impact of a pneumonia outbreak, containment is an important first step and extensive mitigation efforts will be required [27-31].

VII.   CONCLUSION

The main direction as the prevention measures of social consequences due to COVID-19 includes;

- Evidence clearly shows that stigma and fear around communicable diseases hamper the response. What works is building trust in reliable health services and advice, showing empathy with those affected, understanding the disease itself, and adopting effective, practical measures so people can help keep themselves and their loved ones safe. How we communicate about COVID-19 is critical in supporting people to take effective action to help combat the disease and to avoid fuelling fear and stigma.

- Stigma can be heightened by insufficient knowledge about how the new coronavirus disease (COVID-19) is transmitted and treated, and how to prevent infection. Therefore, prioritizing the collection, consolidation and dissemination of accurate country- and community-specific information about affected areas, individual and group vulnerability to COVID- 19, treatment options and where to access health care and information are essentials.

- When talking about COVID- 19 infections, certain words (i.e. suspect case, isolation…) and language may have a negative meaning for people and fuel stigmatizing attitudes. This can drive people away from getting screened, tested and quarantined. We recommend a 'people first'

language that respects and empowers people in all communication channels, including the media.

- Social media is useful for reaching a large number of people with health information at relatively low cost. Use simple language and avoid clinical terms. Words used in media are especially important, because these will shape the popular language and communication on the new Coronavirus (COVID-19). Negative reporting has the potential to influence how people suspected to have the new Coronavirus (COVID-19), patients and their families and affected communities are perceived and treated. This can drive people away from getting screened, tested and quarantined.

- Local health workers in collaboration with community leaders should promote awareness of factual information and dispel myths and inaccurate rumours about COVID-19 among communities, as well as providing support on practices that can be adapted to local contexts to detect and manage cases of COVID-19. They should be also engaged in community sensitization to minimize stigma of people affected by COVID-19, especially children and females, which could increase their vulnerability to abuse and sexual and gender-based violence.

- Given the fact that community in low literacy setting are more likely influenced by the people they already knew, public health actors and other stake holder working in the area had better use community influencers (religious leaders, community leader, tribe leaders, etc) to tackle the social stigma attached with being positive or being under quarantine.

- In anticipating of the possibility of food shortage, special in urban context, collaborating with the agricultural and other relevant sectors could be imperative in preventing the problem that may arise as a result of panic consumption.

- As part of an endeavor to mitigate the impact of covid-19 on health service uptake, there need to be and innovative techniques to improve service utilization. For instance, a phone call reminder would promote and motivate chronic patients to come to hospital.

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Pre-Diabetes State: Anthropometric and Haematological Parameters

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Abstract—Diabetic is a well known public health problem of today. There are many risk factors of it, which can be identified in pre-diabetic state. So the present study was conducted with the aim to know the status of anthropometric and haematological parameters in pre-diabetic states. For this hospital based study pre-diabetic subjects were identified from first degree relatives of type 2 DM Patients, enrolled in diabetic research centre P.B.M. hospital Bikaner. Relevant investigations were done. Data thus collected on semi-structured questionnaire and analysed using content analysis. Data analysis revealed that although mean Body Mass Index (BMI) was within normal range but Waist circumference (WC), West Hip (W/H) Ratio, Systolic blood pressure were higher than the normal range accepted for that parameter. But mean value of all the studied haematological parameter were within the normal range accepted for that parameter. So it can be conclude that anthropology of an individual may be associated with the pre-diabetic state. Hypertension was found in 25.35% of pre-diabetics. Further researches are necessary to find out this possible association of anthropologic parameter and pre-diabetic state.

Keywords: Pre-diabetes, Anthropometric Parameters, Haematological Parameters, Hypertension.

I. INTRODUCTION

Diabetes mellitus (DM) is a public health problem worldwide causing a substantial increase in morbidity and mortality. The prevalence of type 2 diabetes is increasing worldwide and exhibits a challenge on the health care system as well as on the public health and socioeconomic development of all nations.[1]

The causes of type 2 diabetes are multifactorial and result from a combination of environmental and genetic risk factors.[2] The implementation of preventive measures in populations and the identification of high risk groups, which mostly benefit from such activities, is the key point for the early prevention of type 2 diabetes and its complications. Since many years, a number of potential risk factors for type 2 diabetes have been identified. In this context, one's attention was particularly turned on lifestyle risk factors, inflammatory parameters, metabolic abnormalities, and genetic risk factors, many of which have been found to be independently associated with type 2 diabetes.[3]

Among those risk factors, routinely measured haematological parameters, such as White Blood Cell (WBC) count and hematocrit (HCT) level were associated with insulin resistance and incident type 2 diabetes.[4-8] Hematocrit is positively correlated with hyperinsulinemia and risk factors associated with insulin resistance, e.g. high blood pressure, elevated serum triglycerides, low HDL cholesterol, and central obesity and could therefore be related to insulin resistance. Furthermore, hematocrit is a major determinant of blood viscosity. Increased blood viscosity also contributes to the development of insulin

resistance.[5- 9] In addition, chronic inflammation is involved in the pathogenesis of type 2 diabetes and evidence from epidemiological studies suggests an association between total WBC or leukocyte count, a non-specific marker of inflammation, and diabetes risk.[10]

However, only a few prior studies investigated, whether selected haematological parameters such as WBC count, Mean Platelet Volume or red cell count are related to pre-diabetic states.[11-12]

So this study was conducted to know the status of anthropometric and haematological parameters in pre-diabetic states.

II.   METHODOLOGY

This hospital based descriptive study was conducted at Department of Physiology of SP Medical College & Hospital in collaboration with diabetic research centre P.B.M. hospital, Bikaner (Rajasthan) India in year 2019-2020.

Before collecting the data this study was approved by the Institutional Ethical Committee at the Sardar Patel Medical College and Associated Group of P.B.M. Hospitals, Bikaner, Rajasthan, India, approved the study. The Developmental Research Committee at the Rajasthan University of Health Sciences, Jaipur, India, was also approved the study. For taking the written informed consent, all participants read and signed a study consent form approved by the Ethics Committee.

For the study purpose, 142 pre-diabetic subjects were identified from first degree relatives of type 2 DM Patients, enrolled in diabetic research centre P.B.M. hospital Bikaner. Pre-diabetics (Impaired fasting glucose) subjects was identified on the basis of fasting blood glucose 100 to 125 mg/dl and HbA1C (5.7% TO 6.4%) as per American Diabetic Association (ADA) 2011 guidelines.[13] Subjects aged 20-74 years and giving written informed consent were included in the study. Subjects taking lipid lowering drugs, dugs to control blood sugar, hormonal therapy, and hormonal contraceptives were excluded from the study. Subjects having known endocrinal, renal, cardiovascular disorders were also excluded from this study.

All the consented study subjects were given a screening performa for identifying the subjects included for the study as per inclusion and exclusion criteria. Those who were eligible for included in the study were administrated a semi-structured interview schedule to obtain relevant information from the study participants.

Haematological parameters testing were done of all participants and results were obtained and recorded in MS Excel 2010.

Data thus collected were classified, analyse to get inferences with the help of statistical software Primer (Version 6).

III.   RESULTS

Out of 142 subjects. maximum Pre- Diabetic Subjects were found in 30-34 years (48; 33.80%), followed by 35-39 years (29;20.42%) and minimum in 55-59 years age group (1;0.70%). These Pre-diabetic subjects were having male predominance 91(64.08%) males versus 51(35.92%) were female. (Figure 1 & 2)
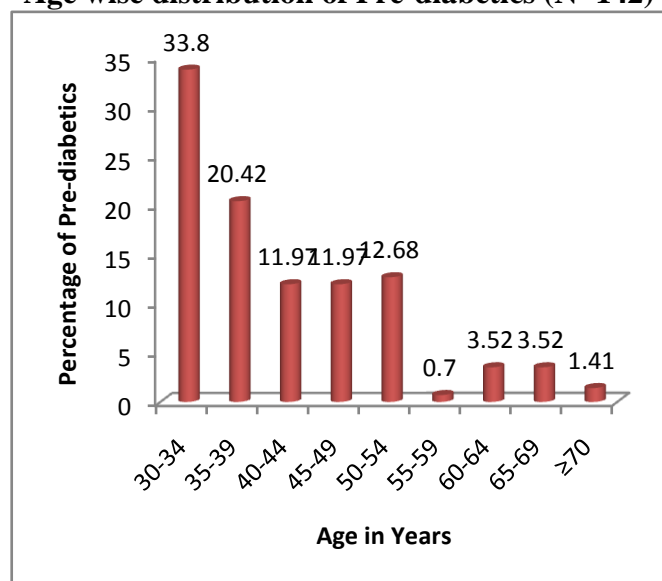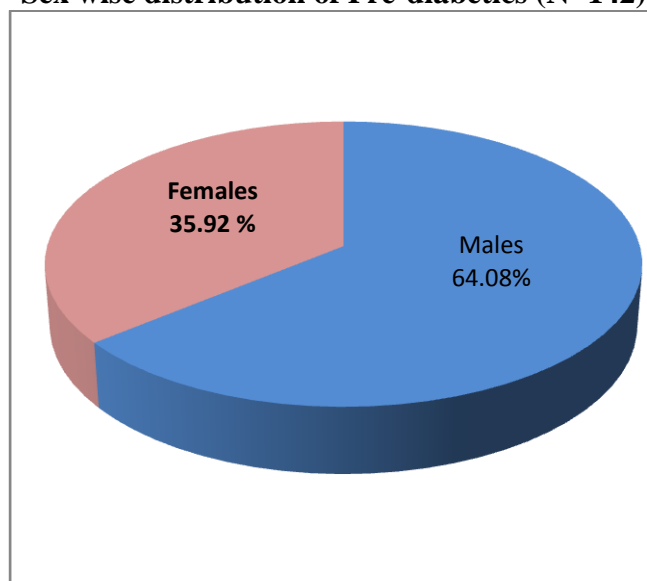
Figure 1
Age wise distribution of Pre-diabetics (N=142)

Figure 2
Sex wise distribution of Pre-diabetics (N=142)

Table 1 shows characteristics of studied pre-diabetics subjects. Mean value of the entire studied anthropometric variable were higher than the normal rage accepted for that variable, except BMI which was within the normal range.

TABLE 1
CHARACTERISTICS IN PRE- DIABETIC SUBJECTS (N=142)

S. No.	Parameters	Mean ± SD	Range	Relation of mean to normal range
1	BMI (kg/m^2)	25.18±4.76	17.2-41.7	Within
2	WC (cm)	92.33±13.20	60.96-139.7	Higher
3	W/H Ratio	0.9195±0.09	0.697-1.652	Higher
4	SBP (mmhg)	130.06±14.38	86-164	Higher
5	DBP(mmhg)	82.26±7.09	70-100	Higher
6	HbA1C (%)	6.03±0.27	5.4-6.4	Higher
7	FBS (mg/dL)	116.92±6.14	100-125	Higher

Table no.2 show that mean value of all haematological parameters in studied pre-diabetic subjects were within the normal rage accepted for that variable.

TABLE 2
HEMATOLOGICAL PARAMETERS IN PRE- DIABETIC SUBJECTS (N=142)

S. No.	Parameters	Mean ± SD	Range	Relation of mean to normal range
1	RBC (10^{12}/L)	4.80±0.59	3.75-8.28	Within
2	WBC (10^9/L)	8.72±2.02	4.6-15.5	Within
3	HB (g/L)	13.19±1.68	8.4-16.2	Within
4	MCV (fl)	84.04±11.90	55-108	Within
5	MCH (pg)	27.66±3.59	14.3-39.1	Within
6	Platelet (10^9/L)	269.38±80.41	105-503	Within

It was also revealed in this study that out of total 142 pre-diabetics, 79 (55.64%) were pre-hypertensive and 36 (25.35%) were with hypertension. (Table 3)

TABLE 3
HYPERTENSIVE STATUS IN STUDY POPULATION (N=142)

S. No.	Hypertensive status	Number	Percentage
1	Normotensive	27	19.01
2	Pre-Hypertensive	79	55.64
3	Hypertensive	36	25.35
	Total	142	

IV.   DISCUSSION

In the present study, total 142 pre-diabetic subjects were studied having mean HbA1C 6.03±0.27 % with mean fasting blood sugar 116.92±6.14 mg/dl.

It was also observed that mean anthropometric parameters like BMI, WC and W/H ratio were found 25.18±4.76 Kg, 92.33±13.20cm and 0.9195±0.09 respectively, where WC and W/H ratio were found higher than the normal rage accepted for these, only BMI was found within the normal range.

Fleming et al. reported anthropometric parameter as an independent risk factor for development of diabetes.[14] Pandey et al.[15] found the cut-off values of BMI for predicting pre-diabetes ≥22.8 kg/m^2 in boys and ≥20.5 kg/m^2 in girls and the cut-offs for waist circumference for predicting pre-diabetes ≥82.5 cm for boys and ≥80.3 cm for girls. BMI and waist circumference estimation can be done for early detection of pre-diabetes in adolescents for further diagnostic evaluation and management. Pratyush DD et al.[16] found waist circumference cut-offs for males was 90 cm with a sensitivity and specificity of 71% and 96%, respectively, and for females was 85 cm with a sensitivity and specificity of 86% and 93%, respectively, having a positive association with metabolic syndrome. WHO Expert consultation[17] reported cut-off of BMI for moderate risk varies from 22 kg/m^2 to 25 kg/m^2, whereas that for high risk ranges from 26 kg/m^2 to 31 kg/m^2 in different Asian populations.

It was also found that mean value of all haematological pparameters like RBC, WBC, HB, MCV, MCH and Platelets in studied pre-diabetic subjects were within the normal rage, which are 4.80±0.59 10^{12}/L, 8.72±2.02 10^9/L, 13.19±1.68 g/L, 84.04±11.90fl, 27.66±3.59pg and 269.38±80.41 10^9/L respectively. Almost similar was observed with other studies.[15,18]

In this present study pre-hypertension was found in 55.64% and hypertension in25.35% of pre-diabetics. Park et al.[19] and Demetria H et al.[20] both reported higher proportion of hypertension in pre-diabetics in their study i.e. 48.7% and 58.14% respectively. Francis BH et al.[21] observed that 36.3% of patients with pre-diabetes and hypertension and 27.1% of patients with pre-diabetes alone developed diabetes and Geva, M et al.[22] found that FPG in the pre-diabetes range, albeit not glycated hemoglobin, is independently and significantly associated with future development of HTN. So it is very important to evaluate for blood pressure in pre-diabetics.

Here in present study as waist circumference and waist hip ratio is higher than normal range, so anthropometric parameters can be used as screening for pre-diabetes. Earlier the diagnosis the better is the management.

V. CONCLUSION

It can be concluded from this present study that although hematological parameters were within normal range but anthropometric parameter were higher in pre-diabetics than the normal range. Prevelance of hypertension was 25.35% in these pre-diabetics in this present study. As there were no comparison group in this study, so to find out the association of various hematological and anthropometric parameters future researches are proposed with appropriate sample size and better study designs.

CONFLICT OF INTEREST

None declared till now.

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