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Caffeine – An Enigma

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Caffeine – An Enigma

Considering the growing public health significance of some forms of caffeine use, such as the consumption of energy drinks with high caffeine content that are currently largely unregulated or combinations of caffeine and methamphetamine, the International Classification of Diseases 11 (ICD 11) separates caffeine from other stimulants.[1] A stimulant and diuretic, caffeine is a bitter alkaloid that is mostly found in coffee, tea, cacao, and kola nuts.[2] As a stimulant of the Central Nervous System(CNS) it boosts the body's flow of hormone like cortisol.[3] Caffeine promotes relative brain hypoperfusion by increasing energy metabolism while simultaneously diminishing cerebral blood flow. Caffeine stimulates noradrenaline neurons, and appears to affect release of dopamine locally.[4] Caffeine is quickly and nearly entirely (up to 99%) absorbed into the bloodstream after consumption.[5]

In adults, routine caffeine consumption up to 400 mg per day and 3 mg/kg by weight per day for children and adolescents does not raise safety concerns, according to research by the European Food Safety Authority (EFSA). The recommended daily dosage of caffeine for expectant women is 200 mg.[6] According to some authorities, individuals who are particularly vulnerable to the negative effects of caffeine include children, adolescents, and pregnant women. Caffeine consumption in low or moderate amount is generally safe, but higher doses consumed by vulnerable individuals can cause cardiovascular problems and perinatal complications.[7]

Some of the positive effects of caffeine that have been documented in the literature includes increased alertness, pain relief, inverse association between caffeine consumption and the risk of Parkinson's disease and protection against Diabetes Mellitus.

Acute ingestion of caffeine results in some increase in blood pressure and change in heart rate (bradycardia or tachycardia) that are dose-dependent. Cardiac arrhythmias are also a side effect. Caffeine toxicity has been observed. Several hospitalizations and some deaths due to caffeine intoxication have been reported.[8] Abstinence from caffeine may cause withdrawal symptoms, including headaches, fatigue, irritability, depressed mood, difficulty concentrating, and flu-like symptoms.[9]

The intake of caffeine which was by way of regular beverages in many households in the form of tea and coffee, is now available in many other substances. Besides tea and coffee, different products that contain caffeine are energy drinks, chocolate and energy bars, cookies, cola beverages, chewing gum, ice cream, pain pills, caffeine pills, skin care products and some weight loss products. Caffeine is commonly used by athletes for its performance-enhancing or ergogenic effects.[10]

Chocolates, one of the most favourite food items of children and adolescents. Most chocolates contain caffeine, except the white milk chocolates which does not have cocoa solids and thus no or minimal caffeine. From a very young age, children ingest caffeine without them or their parents realizing that they are ingesting caffeine.

The darker the chocolate, the higher the caffeine content, which depends on quantity of cocoa solids. The type and origin of the cocoa beans determine the caffeine content. Cocoa contains a good percentage of methylxanthine compounds, caffeine and theobromine are the predominant ones. Both contain naturally occurring substances that can stimulate the central nervous system.[11]

The caffeine content varies depending on the product. The effects of caffeine also vary based on age, gender, individual response to caffeine and other factors. The stimulating effects of caffeine make it an ideal candidate for students preparing for exams. This CNS stimulant is used by college students in various forms, be it coffee, tea, energy drinks, caffeine pills, coffee candy, chocolate and many more. However, during this stressful period, they may consume higher doses of caffeine and experience side effects. Students find the caffeinated products readily available and effective. They should be made aware of the side effects of higher doses of these substances.

There is rising concern about the increasing consumption of caffeinated foods such as coffee, energy drinks, tea and chocolate products, particularly among adolescents. Some researchers have found that over consumption of caffeine in adolescents is associated with a range of adverse health effects, which includes irritability, nervousness, nausea, cardiovascular symptoms, trouble sleeping, osteoporosis, and stomach ulcers.[12]

It is feasible to calculate the amount of caffeine consumed from the products labelling caffeine content. Caffeine consumption calculation excludes caffeine sources that are not explicitly labelled as caffeine compounds. The public health concern is that there is a largely unregulated and rapidly growing market for caffeine-based products and people are unaware of the caffeine contents of foods and the effects of excess consumption of this stimulant.

The soft drinks, chocolates (all varieties), energy drinks which were earlier available in urban markets have now reached to rural markets. These pocket friendly products attract all age groups, especially adolescents who are ready to experiment with new things. The food products, with high caffeine content can be harmful. Some of the advertisements also have strong impact on adolescents to try caffeine containing energy boosting drinks. During periods of stress the young may reach for these products leading to habituation in the long run.

There is an urgent need to study the impact of caffeine on health. The caffeine disorders were included as a separate code under ICD 11 because they have potential for dependence and intoxication. Some important categories from ICD 11 on caffeine consumption are listed in Annexure 1.[13]

Young people are already at risk of using substances, especially tobacco and alcohol. There is an urgent need to prevent addiction to other substances. When alcohol is mixed with caffeine (especially in energy drinks), the caffeine can conceal the depressant effects of alcohol. Drinkers feel more alert than usual. As a result, they may consume more alcohol and be more impaired than they realize, increasing the risk of alcohol-related harm.[14]

There is generally an additive effect on subjective and cardiovascular responses when nicotine and caffeine are combined.[15] We need to focus on research and intervention to reduce caffeine, alcohol and tobacco (CAT) use among adolescents. Products containing caffeine must mention content on the food package label. Some products display the harmful effects and the restriction of consumption for certain groups.

The consumer will be more aware of the warning if it is displayed on the front of the package. The font size should be large enough for everyone to read easily. The energy drinks come with a warning about the effects on children and pregnant women. But, is there a policy that says they are not for sale to children? A law has been passed by Hungary to tax food and drink components with a high risk for health, such as sugar, salt and caffeine.[16] Similar and more stringent regulation should be implemented in our country to minimise the adverse effects of various substances having side effects.

Annexure I: ICD 11 Caffeine use disorder categories[13]

Code: 6C48.2

Caffeine intoxication is a clinically significant transient condition that develops during or shortly after the consumption of caffeine that is characterised by disturbances in consciousness, cognition, perception, affect, behaviour, or coordination. These disturbances are caused by the known pharmacological effects of caffeine and their intensity is closely related to the amount of caffeine consumed. They are time-limited and abate as caffeine is cleared from the body. Presenting features may include restlessness, anxiety, excitement, insomnia, flushed face, tachycardia, diuresis, gastrointestinal disturbances, muscle twitching, psychomotor agitation, perspiration or chills, and nausea or vomiting. Cardiac arrhythmias may occur. Disturbances typical of intoxication tend to occur at relatively higher doses (e.g., > 1 g per day). Very high doses of caffeine (e.g., > 5 g) can result in respiratory distress or seizures and can be fatal

Code: 6C48.3

Caffeine withdrawal has been mentioned as "Caffeine withdrawal is a clinically significant cluster of symptoms, behaviours and/or physiological features, varying in degree of severity and duration, that occurs upon cessation or reduction of use of caffeine (typically in the form of coffee, caffeinated drinks, or as an ingredient in certain over-the-counter medications) in individuals who have used caffeine for a prolonged period or in large amounts. Presenting features of Caffeine withdrawal may include headache, marked fatigue or drowsiness, irritability, depressed or dysphoric mood, nausea or vomiting, and difficulty concentrating."

CODE 6C48.40

Caffeine-induced anxiety disorder is characterised by anxiety symptoms (e.g., apprehension or worry, fear, physiological symptoms of excessive autonomic arousal, avoidance behaviour) that develop during or soon after intoxication with or withdrawal from caffeine. The intensity or duration of the symptoms is substantially in excess of anxiety symptoms that are characteristic of Caffeine intoxication or Caffeine withdrawal. The amount and duration of caffeine use must be capable of producing anxiety symptoms. The symptoms are not better explained by a primary mental disorder (e.g., an Anxiety and fear-related disorder, a Depressive disorder with prominent anxiety symptoms), as might be the case if the anxiety symptoms preceded the onset of the caffeine use, if the symptoms persist for a substantial period of time after cessation of the caffeine use or withdrawal, or if there is other evidence of a pre-existing primary mental disorder with anxiety symptoms (e.g., a history of prior episodes not associated with caffeine use).

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A Cross-sectional Study on Urinary Incontinence and Associated Factors among Elderly Females in a Rural area of Singur, West Bengal

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Abstract:

Introduction: Urinary incontinence (UI) is a chronic debilitating disease affecting a significant proportion of elderly women. However, due to its social and hygienic issues, it often remains underreported in rural areas of India. It has the potential to significantly impact an individual's quality of life, thus highlighting its public health importance. **Objective:** To find out proportion of rural women having UI and its associated risk factors. **Method:** A cross-sectional study was conducted in a rural area of Singur among 120 elderly women aged ≥60 years selected by cluster sampling technique. A pre-designed questionnaire was utilized for data collection which included Questionnaire for Urinary Incontinence Diagnosis (QUID) questionnaire for assessing UI. Data were analysed with SPSS version 16.0.Chi-square test and logistic regression analysis was applied to find out any association between variables. **Results:** Around 42(35%) out of 120 women were found having UI among which the most prevalent type of UI was stress UI 22(18.3%), followed by mixed UI 13(10.8%) and urge UI 7(5.8%). Multivariable logistic regression analysis showed hypertension (AOR = 2.15, 95%CI=1.13–4.75), chronic cough (AOR= 4.50, 95%CI=1.24–16.30), constipation (AOR= 8.58, 95%CI=2.06–35.65), physical activity (AOR= 4.35, 95% CI=1.30–15.35), mental stress (AOR= 8.50, 95% CI=2.07–35.60)were factors significantly associated with presence of UI among the study participants. Only 25(59.5%) had sought healthcare for their issues. **Conclusion:** This study revealed that a significant proportion of rural older women are suffering from UI. Proper medical management of the risk factors associated with UI will help to decrease the burden of UI and improve health status of rural elderly women.

Keywords: Elderly, Risk factors, Rural, Urinary Incontinence

Introduction:

Urinary incontinence (UI) is a very common distressing problem among elderly adults in the community which often affects women due to anatomical and physiological changes with age.[1] According to the International Continence Society (ICS), UI has been defined as: the complaint of any involuntary loss of urine that is a social or hygienic problem.[2] Worldwide, over 200 million people are living with urinary incontinence and it has been observed that UI is three times more common in women than men.[3,4] Urinary incontinence is a troublesome and probably underreported disorder specially in women.

Numerous epidemiologic studies have shown that the incidence of UI increases with age, elderly women are the most affected with a mean prevalence of 30%.[5] It has been estimated that women of different age groups have involuntary urine loss and a major proportion of women over 60 years of age report daily urinary leakage. The prevalence of urinary incontinence is gradually increasing day by

day and may deteriorate the quality of life and disrupt their daily routines. Recently, as the average life expectancy of women has increased and women maintain various social roles, UI has become an important medical and social issue. During normal physiological processes, bladder pressure remains lower than urethral closure pressure which helps in containing the urine, while in any type of bladder or urethral impairment where closure pressure becomes lower than the bladder pressure, urinary leakage occurs.[6] Among elderly women who are mostly in their post-menopausal phase, the genitourinary tract undergo atrophy due to endocrinal changes thus predisposing to the development of UI.[7]Basically there are three types of incontinence: stress urinary incontinence (SUI); urge urinary incontinence (UUI), and mixed urinary incontinence (MUI).

UI upsets persons' freedom and ability to function in everyday life. It has therefore become a significant public health problem having a high economic and human impact. Although different modalities of investigation, treatment, and management of incontinence have developed rapidly over the past decade, its prevalence in the general population has so far been based on estimates made in selected groups of people of different ages.[8] Despite its high prevalence, little is known about its associated risk factors and aetiology. Various factors associated with lifestyle are thought to precipitate lower urinary tract symptoms and urinary incontinence, for example, ageing, pregnancy, vaginal delivery, obesity physical forces (exercise, work), smoking, caffeine and fluid intake, constipation, posture.[9] Most studies on UI have been carried out in developed countries and in hospital-based settings. Scarce data exist on the prevalence in India, especially in rural women in the community or in those of lower socioeconomic status. The condition is usually under reported as many women hesitate to seek help or report symptoms to medical practitioners due to the embarrassing and culturally sensitive nature of this condition. An updated picture of UI in rural women will be of great importance in helping formulating strategies of prevention and control for UI and furthermore in reducing disease burden in India. With this backdrop, this study assessed the prevalence of UI among elderly women in a rural area do West Bengal and elicited its associated risk factors.

Method:

This community-based cross-sectional study was conducted from May to July 2022 among elderly women (age ≥ 60 years)[10] in a rural area of Singur, West Bengal. Participants who did not give written informed consent, were critically ill or were diagnosed with any psychiatric illness were excluded from the study.

A study conducted in rural West Bengal by Biswas B et al. demonstrated the prevalence of urinary incontinence among elderly women to be 27.7%.[11] Considering P = Prevalence of Urinary Incontinence (UI)=27.7%, Z= 1.96 (95% confidence interval), an absolute error of precision (L) to be 10% the minimum sample size estimated using standard Cochran formula came to be 75.71. Considering a design effect of 1.5 for cluster sampling, the sample size came = (75.51 1.5)= 113 and taking 5% non-response rate, final sample size came 120.

A two-stage cluster sampling was done to select study participants. In study area there were 64 villages, from this villages at first stage 12 villages or cluster were selected randomly (Each village was denoted as a cluster). With the help of local maps and local people after going to the centre of each village, at first one direction was chosen randomly by rotating bottle head. Going in the direction of bottle head the first house was selected to find the study participant satisfying the inclusion criteria. If not, then next adjacent house was visited until 10 participants were selected from each village (At the second stage 10 elderly women were selected from each cluster (120/12=10). When there was end of road, next lane was taken to complete sample size. Same procedure was repeated in rest 11 clusters. Thus, in total 120 study participants were included in the study.

Face-to-face interview of the participants were done with the help of pre-designed pre-tested questionnaire. The questionnaire was translated into local language (Bengali). Pretesting of the

questionnaire was performed among 30 elderly women in a separate study setting who were not included in the study. Internal consistency of the questionnaire was checked by Cronbach's alpha (α=0.72). Face and construct validity of the questionnaire was checked by public health experts. In addition, certain anthropometric measurements, clinical examination and review of past medical records were also done. The questionnaire consisted of the following domains:

a. Socio-demographic characteristics of the study participants which included age(in completed years), level of Education (in completed years), religion, caste, family type, socio economic class of the family (Modified B.G. Prasad Scale, 2020),[12] occupational status

b. Reproductive variables- Normal vaginal delivery(NVD), history of abortion, age of first child birth, history of gynae operation, Lower urinary tract symptoms, fecal incontinence;

c. Behavioural characteristics of the study participants which included physical activity (assessed by International Physical Activity Questionnaire-Short Form questionnaire), mental stress (assessed by Perceived stress scale PSS-4). Physical activity was categorized as "Low", "Moderate" and "high" activity as per IPAQ-SF[13] (International Physical Activity Questionnaire- short form).

d. Morbidity status assessed for the presence of comorbidities (e.g.) hypertension, diabetes mellitus), mental stress. Presence of comorbidities was identified with the help of clinical examination (including blood pressure measurement) and review of past medical records. Body mass index was estimated and categorized as per WHO standards. Presence of mental stress was assessed by the Perceived Stress Scale-4 (PSS-4) in which the total scores ranged from 0-16. Cut-off for high mental stress was taken to be 50% of the attainable total scores (=8).[14]

e. The outcome variable of the study was presence of Urinary incontinence (UI) among the study participants which was assessed by the QUID Questionnaire.[15] It is a 6-item questionnaire designed to distinguish between stress UI and urge UI. QUID identifies the presence and frequency of stress and urge UI symptoms. Three items focus on stress UI and another three items focus on urge UI. Each item includes 6 frequency-based options ranging from none of the time to all of the time, which are scored from 0 to 5 points. Scores are calculated in additive fashion, resulting in separate stress and urge scores, each ranging from 0 to 15 points. QUID scoring indicates if stress score ≥ 4 it is Stress UI (SUI) and urge score ≥ 6 it is urge UI (UUI).

Data were analysed using Microsoft Excel (version 2019) and SPSS software (version 16 IBM Corp. USA). Continuous variables were denoted as mean±(standard deviation) or median (interquartile range) while categorical variables were denoted by frequency with percentages. After checking for multicollinearity among the variables (variance inflation factor>10), factors associated with the outcome variable were analysed using univariate logistic regression analysis. All the biologically plausible significant variables (p-value<0.05) at 95% confidence interval in the univariate analysis were then included in the final multivariable model.

Ethical clearance was obtained from Institutional Ethics Committee of All India Institute of hygiene & Public Health, Kolkata. The purpose of the study was described and the study was conducted after taking written informed consent from the participants. Data confidentiality and privacy were maintained throughout the study. All other ethical principles as per Declaration of Helsinki were strictly adhered to.

Results:

Majority of the study participants (44.2%) belonged to age group 70 years or above. The median (Inter-quartile range) of the age of the study

participants was 69(73-65) years. Majority (95%) of the study participants were Hindu. About 52.5% participants were with no formal education. Most of the study participants (64.2%) belonged to other caste. Among the elderly women majority (58.3%) belonged to socio economic class IV according modified BG Prasad classification. About 78.3% were homemaker by occupation. Nearly 64.2% elderly women stay in the joint family. (Table 1)

Reproductive health profile:

Nearly 22.5% of them had a history of gynecological operation. Among them 53.3% had three or less than three normal vaginal delivery (NVD), while 21.7%

had a history of abortion. Around 35.8% had history of fecal incontinence (double incontinence). About 37.5% of them were suffering from anyone of the Lower Urinary Tract Symptoms (LUTSs). (Table 2)

Behavioral characteristics and morbidity profile of the study participants:

Nearly 32.5% of them were diabetic while 36.7% of them were hypertensive. Among the study participants 36.7% had chronic cough and 35% had history of constipation. Among them 36.7% elderly women had low physical activity and 35% with high mental stress. According to BMI 25.8% were overweight and 2.5% were obese.

Table 1: Distribution of study participants according to Socio-demographic characteristics (N=120)

Variables	Categories	N (%)
Age (In completed years) Median(IQR)=69,(73-65)	60-64	28(23.3)
	65-69	39(32.5)
	≥ 70	53(44.2)
Religion	Hindu	114 (95.0)
	Muslim	6 (5.0)
Educational Level	Illiterate	63(52.5)
	Below primary	18(15.0)
	Primary	29(24.2)
	Middle	6(5.0)
	Secondary	4(3.3)
Caste	General/ Others	77(64.2)
	SC (Scheduled Caste)	38(31.6)
	OBC(Other backward classes)	5(4.2)
Socio-economic Status*	Class I	4(3.3)
	Class II	6(5.0)
	Class III	19(15.8)
	Class IV	70(58.3)
	Class V	21(17.6)
Occupation	Homemaker	94(78.3)
	Cultivator/ Biri binder	26(21.7)
Family Type	Nuclear	43(35.8)
	Joint	77(64.2)

According to Modified B.G Prasad classification[12]

Table 2: Distribution of study participants according to Risk factors characteristics (N=120)

Variables	Categories	N (%)
Diabetes	Present	39(32.5)
	Absent	81(67.5)
Hypertension	Present	44(36.7)
	Absent	76(63.3)
Chronic cough	Yes	44(36.7)
	No	76(63.3)
Constipation	Yes	42(35.0)
	No	78(85.0)
NVD (Normal Vaginal Delivery)	≤3	64(53.3)
	>3	56(46.7)
LUTS (Lower Urinary Tract Symptoms)	Yes	45(37.5)
	No	75(62.5)
H/O Gynaecological Operation	Yes	27(22.5)
	No	93(77.5)
Faecal Incontinence	Yes	31(25.8)
	No	89(74.2)
H/O Abortion	Yes	62(51.7)
	No	58(48.3)
BMI(Body Mass Index)	Underweight(<18.5)	2(1.7)
	Normal(18.5-24.9)	84(70.0)
	Overweight (25-29.9)	31(25.8)
	Obese (≥30)	3(2.5)
Physical activity level	Low	48(40.0)
	Moderate	42(35.0)
	High	30(25.0)
Mental stress	Low	78(65.0)
	High	42(35.0)

Estimation of Urinary Incontinence among the study participants:

Forty two (35%) out of 120 women were found having UI. The most prevalent type of UI was stress UI (52%); followed by mixed UI (31%) and urge UI (17%). (Figure 1) It has been seen that 44.2% of elderly aged 70 years and above; 32.5% of aged 65-69 years elderly women and 23.3% elderly women aged 60- 64 years had urinary incontinence. Only 30.6% sought treatment for UI.

Factors associated with cardiovascular risk among the study participants:

In univariate logistic regression analysis, study participants who were with no formal education, having a history of gynecological operation, NVDs(>3), diabetic, hypertension, chronic cough, constipation, LUTS, low physical activity, high mental stress had shown significantly greater odds of having UI. (Table 3) In multivariable model hypertension (adjusted odds ratio [AOR]=2.15 [1.13–4.75]),

**Table 3: Factors associated with presence of UI among the study participants:
Univariate Logistic Regression Analysis (N=120)**

Variables	Category	Total N (%)	Present of UI N (%)	Unadjusted Odds ratio (95% CI[#])
Age (In Years)	Below 65	28(28.3)	8(28.6)	1(Ref)
	65 and Above	92(76.7)	34(37.0)	1.47(0.58-3.68)
Religion	Hindu	114(95.0)	38(33.3)	0.25(0.04-1.42)
	Muslim	6(5.0)	4(66.7)	1(Ref)
Caste	Gen/Others	77(64.2)	27(35.1)	1.08(0.46-2.20)
	SC/OBC	43(35.8)	15(34.9)	1(Ref)
Education	No Formal Education	63(52.5)	34(54.0)	**7.18(2.92-17.60)***
	With formal education	57(47.5)	8(14.0)	1(Ref)
Occupation	Homemaker	94(78.3)	37(39.4)	2.72(0.94-7.86)
	Cultivator/ Biri-binder	26(21.7)	5(19.2)	1(Ref)
Socio-economic Status	Below SE Class IV	29(24.2)	6(20.7)	1(Ref)
	SE Class IV and above	91(75.8)	36(39.6)	2.50(0.93-6.76)
Type of Family	Nuclear	43(35.8)	6(14.0)	1(Ref)
	Joint	77(64.2)	36(46.8)	1.08(0.46-2.20)
Diabetes	Absent	81(67.5)	14(17.3)	1(Ref)
	Present	39(32.5)	28(71.8)	**12.18(4.93-30.09)***
Hypertension	Absent	76(63.3)	11(14.5)	1(Ref)
	Present	44(36.7)	31(70.5)	**14.09(5.67-34.99)***
Chronic cough	No	76(63.3)	11(14.5)	1(Ref)
	Yes	44(36.7)	31(70.5)	**14.09(5.67-34.99)***
Constipation	No	78(85.0)	10(12.8)	1(Ref)
	Yes	42(35.0)	32(76.2)	**21.76(8.23-57.31)***
LUTS (Lower Urinary Tract Symptoms)	No	75(62.5)	15(20.0)	1(Ref)
	Yes	45(37.5)	27(60.0)	**6.00(2.63-13.65)***
NVD (Normal Vaginal Delivery)	≤3	64(53.3)	9(14.1)	1(Ref)
	>3	56(46.7)	33(58.9)	**8.76(3.62-21.20)***
H/O Gynaecological Operation	No	93(77.5)	25(26.9)	1(Ref)
	Yes	27(22.5)	17(63.0)	**4.62(1.86-11.43)***
Physical Activity	Low	44(36.7)	11(14.5)	**14.09(5.67-34.99)***
	Moderate/High	76(63.3)	31(70.5)	1(Ref)
Mental Stress	Low	78(65.0)	10(12.8)	1(Ref)
	High	42(35.0)	32(76.2)	**21.76(8.23-57.31)***
Faecal Incontinence	No	77(64.2)	36(46.8)	1(Ref)
	Yes	43(35.8)	6(14.0)	1.08(0.46-2.20)
H/O Abortion	No	94(78.3)	37(39.4)	1(Ref)
	Yes	26(21.7)	5(19.2)	2.72(0.94-7.86)
BMI	Under nutrition/Normal	86(71.7)	30(34.8)	1.08(0.46-2.20)
	Overweight/Obese	34(28.3)	12(35.2)	1(Ref)

*p<0.05 is considered as significant, #CI= Confidence interval

Table 4: Multivariable Logistic Regression Analysis of Factors associated with presence of UI among the study participants (N=120)

Variables	Category	Total N (%)	UI present N (%)	Unadjusted Odds ratio (95% CI#)	Adjusted Odds ratio (95% CI#)
Education	No Formal Education	63(52.5)	34(54.0)	7.18(2.92-17.60)	1.18(0.96-3.26)
	With formal education	57(47.5)	8(14.0)	1(Ref)	1(Ref)
Diabetes	Absent	81(67.5)	14(17.3)	1(Ref)	1(Ref)
	Present	39(32.5)	28(71.8)	12.18(4.93-30.09)	2.28(0.56-9.26)
Hypertension	Absent	76(63.3)	11(14.5)	1(Ref)	1(Ref)
	Present	44(36.7)	31(70.5)	14.09(5.67-34.99)	2.15(1.13-4.75)*
Chronic cough	No	76(63.3)	11(14.5)	1(Ref)	1(Ref)
	Yes	44(36.7)	31(70.5)	14.09(5.67-34.99)	4.50(1.24-16.30)*
Constipation	No	78(85.0)	10(12.8)	1(Ref)	1(Ref)
	Yes	42(35.0)	32(76.2)	21.76(8.23-57.31)	8.58(2.06-35.65)*
LUTS	No	75(62.5)	15(20.0)	1(Ref)	1(Ref)
	Yes	45(37.5)	27(60.0)	6.00(2.63-13.65)	0.73(0.17-3.01)
NVD	≤3	64(53.3)	9(14.1)	1(Ref)	1(Ref)
	>3	56(46.7)	33(58.9)	8.76(3.62-21.20)	2.35(0.62-8.83)
H/O Gynaecological Operation	No	93(77.5)	25(26.9)	1(Ref)	1(Ref)
	Yes	27(22.5)	17(63.0)	4.62(1.86-11.43)	0.52(0.09-2.73)
Physical Activity	Low	44(36.7)	11(14.5)	14.09(5.67-34.99)	4.35(1.30-15.35)*
	Moderate/High	76(63.3)	31(70.5)	1(Ref)	1(Ref)
Mental Stress	Low	78(65.0)	10(12.8)	1(Ref)	1(Ref)
	High	42(35.0)	32(76.2)	21.76(8.23-57.31)	8.50(2.07-35.60)*

p<0.05 is considered as significant, #CI= Confidence interval, Hosmer-Lemeshow test of significance=0.12 , Cox & Snell's R^2=0.28, Nagelkerke's R^2=0.37

Figure 1: Distribution of study participants according to types of UI (N=42)

17%

31%

52%

■ Stress UI   ■ Mixed UI   ■ Urge UI
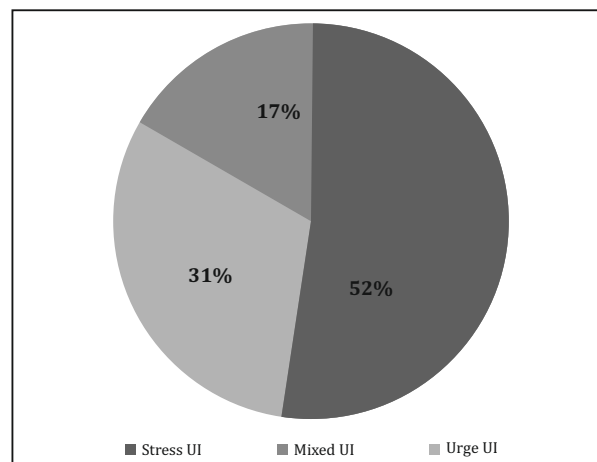
chronic cough (AOR= 4.50[1.24–16.30]), constipation (AOR = 8.58 [2.06–35.65]), low physical activity (AOR = 4.35 [1.30–15.35]) and high mental stress (AOR = 8.50 [2.07–35.60]) remained significant after being adjusted with other significant variables. (Table 4) The non-significant Hosmer-Lemeshow test (p-value>0.05) indicated goodness of fit of the model while 28-37% of the variance of the outcome variable could be explained by this model.

Discussion:

About 35% of the study population was found to have UI. The findings were consistent with findings of Prabhuand Shanbhag[16] (25.5%), Ansar et al [17] (23.9%), and Seshan and Muliira[18] (33.8%), Abha et al[19](34.0%), Kılıç[20] (37.2%), and Sensoyet al[21] (44.6%) have reported like this. Singh et al[22] (21.8%), Ge et al[23](22.1%), Sumardi et al[24](13.0%), Abiola et al [25](12.6%), and Bodhare et al[26](10.0%) have reported less. This variance in the prevalence may be due to different study population, settings, and definition of UI used.

In present study, prevalence of urinary incontinence was more in women aged 70 and above (44.2%), women between 65 and 69 years (32.5%) and 60 and 64 years (23.3%). In a study done by Nojomiet al, urinary incontinence was higher among age group > 55 years. Another study done by Singh et al. showed a low prevalence in age groups < 20 (7.6%), 31–40 years (11.6%) and > 70 years (20%) and the highest incidence among 61–70 years (42.8%).[30]

The study revealed that illiterate women are at more risk. Hence educational level plays a vital role in this regard. Sensoy et al,[21] Seshan and Muliira[18] and Ge et al[23] had similar findings. A history of prolonged labor or h/o gynaecological operation is an established cause of urinary tract injury thus increases the risk of UI. The study had identified a history of prolonged labor as a risk factor for UI similar to Bodhare et al[22] and Kılıç[20] with increase in number of childbirth chance of trauma to the urinary

tract also increases. The study established NVD as a risk factor for UI similar as Singh et al,[22] Ge et al[23] Seshan and Muliira[18] and Sensory et al.[21]

A history of gynecological operation imposes risk of iatrogenic trauma to the urinary tract, thus increasing risk of UI. The study revealed that also which is similar to findings of Prabhu and Shanbhag[16], Sensoy et al[21], Ge et al[23] and Singh et al.[22] Diabetes causes polyuria which laid additional burden on sphincters of urinary tract resulting in UI. The current study also establishes the fact same as Prabhu and Shanbhag[16], Kılıç[20], Ge et al[23] and Singh et al[22] Constipation and chronic cough create additional stress on both the anal and urethral sphincter resulting into UI. The studies by Prabhu and Shanbhag[16] Bodhareet al[26] and Sensoy et al[21] identified constipation and chronic cough both as risk factors of UI while Ge et al[23] found constipation and Sumardi et al[24] identified chronic cough as a risk factor. The study establishes LUTS as one of the most important risk factors for UI similar to Sumardi et al,[24] Sensoy et al,[21]Geetal,[23]and Kılıç.[20] Chronic cough has a direct association with urinary incontinence. If there is a sudden increase in the intra-abdominal pressure that may produce the exhaustion of pelvic floor muscles. Even a momentary relaxation of thesemuscles may leak urine. Recurrent UTIs may be treated as a trivial matter by the community for which they resort to home remedies and drinking fluids in plenty and hardly taken seriously as a medical condition.

The most prevalent type of UI was stress UI (18.3%), followed by mixed UI(10.8%) and urge UI(5.8%). This finding further corroborated earlier reports from epidemiological studies of UI in India in which stress incontinence was the most common type of UI among women with UI.[16,19,22] Only 30.6% sought treatment for UI which is better compared to Prabhu and Shanbhag[16](14.4%), Sarici et al[27](10.7%), Jokhio et al[28](15.7%) and worse compared to Lasserre et al[29](39.7%).

Present study has shown that no formal education, diabetes, hypertension, Normal vaginal delivery (≥3) and history of gynaecological operation, chronic cough, constipation, low physical activity and high mental stress had a positive association with urinary incontinence.

Limitations:

Since this study was of cross-sectional in nature, causality of the factors could not be established. Some of the information collected was recall based, hence bias might be possible.

Conclusion:

Prevalence of UI is high in rural women. Most prevalent one is stress UI. Majority of them did not sought treatment for UI which is matter of concern. Generating awareness regarding UI may help to improve health-seeking behavior. In the current study, increasing level of education among the rural female population will help to decrease the risk of Urinary incontinence that will lead to improve mental and social health of elderly women. Several treatment choices for UI are now available with greater effectiveness. Proper medical management of the comorbid conditions (hypertension, chronic cough, high mental stress) and other risk factors (constipation, low physical activity) will help to decrease the burden of urinary incontinence and that will improve level of living among rural elderly women.

Declaration:

Conflict of Interest: Nil

Funding: Nil

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Assessing Role of HRCT Screening Policy among COVID-19 Test-Negative Symptomatic Patients in Ahmedabad, India

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Abstract:

Introduction: To effectively contain the disease and controlling the progression of the COVID19 pandemic, Ahmedabad Municipal Corporation (AMC) implemented a unique policy to screen symptomatic individuals with negative diagnostic tests using the High-Resolution Computed Tomography (HRCT) scan. **Objective:** To analyse the findings of the HRCT screening policy during the COVID19 pandemic situation. **Method:** During the period of HRCT Screening policy, i.e., 23rd July 2020 to 31st December 2020, a total of 41034 scan record from 25 CT scan centers were available. A retrospective analysis of these secondary data available with the health department of AMC was carried out after due permission from the local authority. **Results:** A total of 11337 [27.63%, 95% Confidence Interval (CI) 27.20-28.06] were reported as COVID positive. Males reported higher positivity (27.87%) than females (27.17%), however the difference was statistically not significant (Z=1.512, p=0.131). Age wise positivity shows increasing trend, while zone wise comparison shows positivity in line with the cases from respective zone. Analysis of CT severity score shows that 66.15% had Mild, 26.07% had moderate and 7.78% had severe lung involvement. **Conclusion:** HRCT screening policy identified additional cases of COVID19 and helped in isolation/admission of a large number of suspected cases which helped immensely in better control of the pandemic. HRCT, when used in combination with other diagnostic tests, plays a crucial role in controlling the pandemic situation.

Key Words : COVID19, High Resolution Computed Tomography, Public health policy, Screening, Test negative symptomatic

Introduction:

A large outbreak of a novel Coronavirus infection started from Wuhan, China in December 2019.[1] The International Committee on Taxonomy of Viruses named this novel corona virus as Severe Acute Respiratory Syndrome CoronaVirus2 (SARS-CoV-2).[2] The disease caused by the SARS-CoV2 was named as Corona virus Disease-2019 (COVID-19) by the World Health Organization (WHO).[3] The outbreak was declared as a Public Health Emergency of International Concern.[4] Later on, concerned by the alarming levels of spread and severity, WHO declared it as Pandemic on March 11, 2020.[5]

Reverse Transcription based Polymerase Chain Reaction (RT-PCR) is considered as 'gold standard' for identifying viral presence.[6] Even though, it requires more time and has low sensitivity, it played a crucial role during the pandemic as it was the only

available test initially. Various factors like quality of sample, skill and procedure of sample collection, maintenance of cold chain, quality control in laboratory etc. are also known to affect the sensitivity of the RT-PCR.[7,8] Very soon, Rapid Antigen Test (RAT) kits were developed, which were very handy and useful in hospital and field settings as the results were available quickly. Limitations of RAT also includes low sensitivity. Various guidelines, including from ICMR, mentions only RTPCR and RAT as standard tests recommended for diagnosis of COVID-19.[9]

Since respiratory involvement and pneumonia are common presenting symptom along with fever, a high-resolution CT scan not only helps in accurate diagnosis of viral pneumonia but also gives an early indication of pneumonia.[10,11] This is particularly important when close contact and thorough clinical examination is usually avoided during pandemic of COVID19. HRCT not only helps in early and proactive case detection, identifying disease severity but also explicate the involvement of lungs.[12] Subjective CT findings were categorized by experts and diagnosis of viral pneumonia based on 'radiologic features as defined by radiologists' were developed and followed for diagnosis of COVID-19 by many clinician consultants and radiologists.[13]

An early identification of lung involvement, benefits the patient by timely medical interventions to prevent worsening of the pneumonia, at the same time it benefits the society at large by identifying and isolating the patient/suspected cases and thereby preventing further spread and protecting the society at large.[14] Breaking the chain of transmission is crucial in pandemic control, but low sensitivity coupled with a high false negative result from both the tests (RTPCR as well as RAT) missed so many individuals with infection, contributing to further spread of the disease.[15] Scientific studies have also documented that due to low sensitivity, RTPCR/RAT alone is insufficient to diagnose COVID19, as many suspected cases with typical clinical features and radiological findings were not diagnosed by RTPCR.[16,17] To effectively contain the disease and preventing the further spread of the pandemic, Ahmedabad Municipal Corporation (AMC) adopted a policy to screen symptomatic individuals with negative test results using the High Resolution Computed Tomography (HRCT) scan, and is described in detail elsewhere.[18] A retrospective analysis of secondary data regarding HRCT screening policy available with the health department of AMC was carried out to assess the role of HRCT screening policy and analyze its findings during the COVID19 pandemic situation in Ahmedabad.

Method:

Retrospective record-based study was carried out with an attempt to scientifically document the analysis of available HRCT data and for sharing the findings to the larger scientific community in general. Ahmedabad city with approximately 7 million population is divided into 48 wards distributed across 7 zones. There are 75 Urban Primary Health Centers which cater the primary health care services to the people of Ahmedabad. During first half of 2020, Ahmedabad was one of the earliest cities from India to witness the high COVID19 cases. This was documented in one of the seroprevalence study by ICMR in the containment zones during May '2020 reported >50% seroprevalence in Ahmedabad, one of the highest in entire country.[19] In the background of low sensitive diagnostic tests for COVID19, keeping the need to screen test-negative symptomatic individuals and need of the poor to get the HRCT screening services, AMC created a low cost public-private model with cooperative-coordinated referral system.[18] As per this model, Medical Officers from various health centers including UPHC / CHC / Referral hospitals / Dhanvantri OPD etc. referred symptomatic but test-negative individuals for screening through HRCT at no cost to patients. As part of the memorandum of understanding (MOU), the Health department reimbursed the cost directly to the CT scan centers at a predefined rate. The CT scan centres need to produce the referral slip with all necessary details and signature with stamp of the referring Medical Officers for their payment.

The screening policy evolved gradually and it was in force from 23rd July 2020 to 31st December 2020. A summary of all the HRCT carried out by the designated private CT scan centre was available with the health department of Ahmedabad Municipal Corporation. The present study is a record based retrospective study which covered a total of 41034 HRCT scans. The individual patient details also included CORADs scoring and CT severity score.[20,21] There were few CT scan centres who were following 40 points reporting system.[20] On the other hand remaining majority were following 25 points system to report the CT severity.[21] To make them uniformly comparable, authors categorized the CT severity score into Mild, Moderate and Severe as per their respective standard classification.[20,21]

After getting written permission, authors analyzed the HRCT screening data to assess the role of the policy and to document its overall findings. Confidentiality was ensured while handling all the scan data and the results.

Data were entered and analysed using Microsoft Excel. Z test was applied as a test of significance for statistical analysis. A "p" value was considered significant at <.05 level.

Results:

As part of the policy, health department of AMC, through 25 CT scan centers enrolled with a MOU carried out a total of 41034 HRCT scans. Analysis of these HRCT screening among the symptomatic patients (Table 1) shows that a total of 11337 [27.63%, 95% Confidence Interval (CI) 27.20-28.06] were reported as COVID positive.

There were 26823 (65.37%) male and 14211 (34.63%) females, who were screened under this policy. The positive HRCT was reported among 7476 (27.87%) males whereas, 3861 (27.17%) HRCT were reported as positive among females. The difference in positivity across both the sex group was statistically not significant (Z=1.512, p=0.131).

Looking at the age group wise details, majority of the individuals belong to young and middle-aged groups. The age groups 20-50 years covered 62.26% of the individuals. There were very few on both the extremes of the age. Looking at the positivity of HRCT, the lowest positivity was recorded for 0-9 years age group (4.45%) and the highest was recorded for 90-99 years age group (45.00%) and the positivity consistently shows increasing trend with increase in the age-groups with some exceptions. Creating wider and fewer age-groups for the purpose of analysis shows 5.55% positivity for children and adolescent (< 18 years), 16.31% for 19-35 years, 35.64% for 36-60 years and 42.78% for 60> years age group.

Zone wise comparison shows that the numbers screened varies widely. The Central Zone (CZ) has very few persons screened by HRCT whereas North West Zone (NWZ) and West Zone (WZ) had the highest number of persons screened. In spite of such variations the positivity across all zones varied in a narrow range of 24.62% to 29.14%.

The analysis of all HRCT according to referral centre shows that majority (30634, 74.65%) were referred by the UPHC. The positivity among patients referred by UPHC was higher (29.01%) as compared to those referred by Dhanvantri (21.47%).

The month wise HRCT data shows that there were very few HRCT done during July 2020. The total monthly scan increased up to October and then reduced during November and December months. It was important to get the profile of those who are HRCT positive. The analysis of these positive patients (11337, 27.63%) shows that there were more positive males than positive females. The proportion of males among positives (65.94%) was higher than the proportion of males among total screened (65.37%). On the other hand, proportion of females among positives (34.06%) was lower than the proportion of females among total screened (34.63%).

Age group wise analysis of these positive patients shows a near normal bell-shaped distribution with very few positives at the extremes of the age groups with the peak reaching at 50-59 years age group. Majority of the positive patients

(78.38%) were referred by the UPHC, whereas 14.40% were referred by Dhanvantri.

CT severity score records were reported differently by different CT scan centres. While most CT scan centres followed reporting by 25-point system, a few centres were following 40-point system. To compare both the CT severity scoring system, they were converted into mild, moderate and severe as per their uniform standard classification. With this standardization, as shown in Figure 1, majority had severity score in the range of "Mild" infection (7499, 66.15%). There were fewer in the

Table 1: Analysis of HRCT screening among COVID19 test negative symptomatic Patients (N=41034)

Variables	Total screened	Positive	% Positive
Total	41034	11337	27.63
Gender			
Male	26823	7476	27.87
Female	14211	3861	27.17
Age Group (Years)			
0-9	292	13	4.45
10-19	2394	139	5.81
20-29	8828	1079	12.22
30-39	9372	2283	24.36
40-49	7349	2474	33.66
50-59	6310	2585	40.97
60-69	4426	1925	43.49
70-79	1703	708	41.57
80-89	340	122	35.88
90-99	20	9	45.00
Zones			
Central Zone (CZ)	2080	561	26.97
East Zone (EZ)	5498	1570	28.56
North West Zone (NWZ)	8798	2343	26.63
North Zone (NZ)	5797	1653	28.51
South West Zone (SWZ)	5660	1586	28.02
South Zone (SZ)	4936	1215	24.62
West Zone (WZ)	8266	2409	29.14
Referred By			
Dhanvantri	7602	1632	21.47
UPHC	30634	8886	29.01
Data Not Available	2798	819	29.27
Month (2020)			
July	551	131	23.77
August	7673	1547	20.16
September	12422	3128	25.18
October	14483	4146	28.63
November	5169	2019	39.06
December	736	366	49.73

Figure 1: Distribution of Patients according to CT severity category
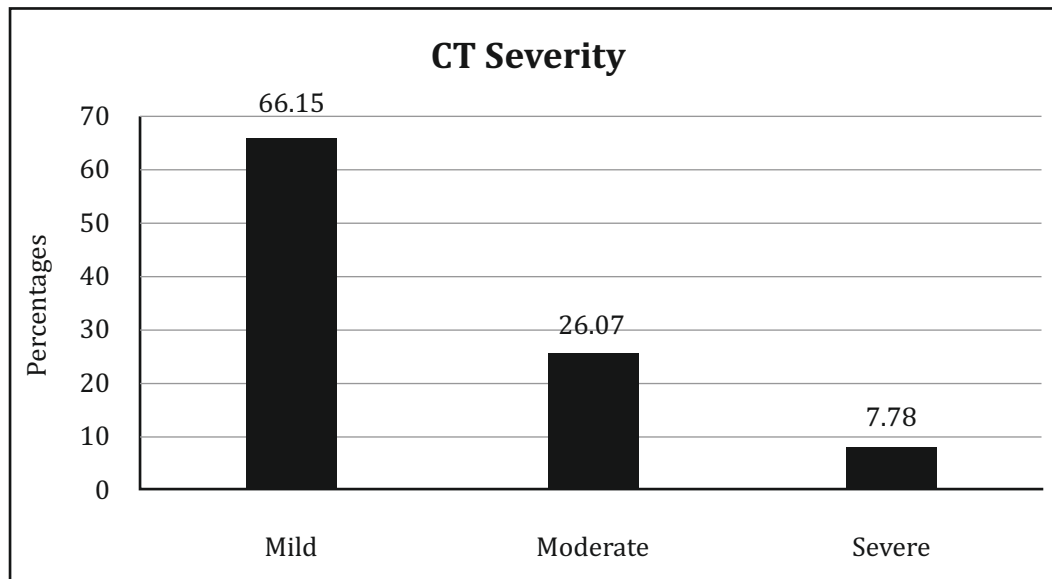
moderate category (2956, 26.07%) and even fewer in the severe category (882, 7.78%).

Discussion:

Multiple studies focusing on the role of HRCT in COVID19 have been published, which have helped in justifying its usefulness and effectiveness. This retrospective record-based study is one more such study which focused on the HRCT screening data among the test negative symptomatic patients. It is based on the HRCT policy adopted by the Health Department of the Ahmedabad Municipal Corporation, from Gujarat, India. The present study is one of the biggest in terms of the number of HRCT included for the purpose of analyzing COVID19 screening.

Current study included HRCT data of 41034 scans carried out from July to December 2020 during the COVID19 pandemic. Authors calculated the HRCT positivity of 27.63%. Analysis shows that the positivity among both the sex group was not significantly different statistically, which is similar to findings from other studies.[22]

In this study data analysis included patients with all age groups. Although children are less likely to develop symptoms, usually have milder infection and for shorter duration, there are reports of severe infection among children as well which are reported

through HRCT.[23] This is the reason why the HRCT policy by AMC included children as well, when indicated. The age-group wise analysis also reflected that the HRCT positivity among the symptomatic patients shows increasing trend with the age. This finding is in line with multiple other scientific studies on COVID19, which have clearly documented that as the age increases the chances of symptomatic infection with severe symptoms lasting for longer duration is more likely.[24-28] Such a clinical picture and age association is also reflected through data analysis of age group wise HRCT positivity.

Zone wise comparison of HRCT positivity shows that the Central Zone (CZ) which had reported more cases during the earliest phase of pandemic in Ahmedabad, had very few persons screened by HRCT. The North West Zone (NWZ) and West Zone (WZ) which were reporting higher number of COVID19 positive patients during the study period, had the highest number of persons screened with HRCT. In spite of this variation in the numbers screened, the HRCT positivity across all zones varied in a narrow range of 24.62% to 29.14%.

Majority of patients referred for HRCT are referred by UPHCs. This is also due to the fact that UPHCs are established health centres catering primary health care services to the urban population. These were the only initial referring centre to begin

with during the starting point of implementation of the policy. Later on, Dhanvantri Raths (mobile clinics) were permitted to refer patients for HRCT.

The policy was implemented from 23rd July 2020 and so month wise analysis shows very few screenings were done in July. This was due to the fact that, there were limited number of HRCT centre during the initial phase of the policy and the operational reality that the roll-out of policy take some time at the ground level. Gradually more HRCT centres came forward to join through a MOU with the Health Department of Ahmedabad Municipal Corporation. So, the screening increased and reached its peak in October. It is this high level of screening which identified more cases at an early stage and helped in predicting a surge in cases at an early stage. During the months of November and December, with high number of cases, the testing increased to a great extent and the numbers required to screen were reduced. But, the positivity among HRCT increased from around 20.16% (August) to almost 49.73% (December). During the December, the authority took the decision of discontinuing the policy which resulted into a limited number of screening during December before the policy came to an end on 31st December 2020.

Implementing this HRCT policy was like a natural experiment. Looking back, at the earlier situation now, it seems that a large number of probable cases of COVID were identified with this policy. These were either isolated or admitted in hospitals under the suspect category which helped them in early recovery with favorable outcome. This has also helped in reducing the further ongoing transmission. In the absence of this policy, Ahmedabad would have recorded an even greater peak and higher number of cases. In the absence of this policy, many people would have to pay out of pocket for various investigations and hospital admission, which in the critical times of COVID pandemic would have been like a mortal blow on the low middle class families who are surviving with great difficulty in the times of pandemic. Implementing this policy suggests that it helps in

identifying a greater number of suspected COVID patients, in spite of a negative diagnostic test (RAT/RTPCR). When used judiciously along with low sensitive diagnostic tests, such policy might help in reducing the speed of disease transmission and helps in flattening the curve of the pandemic, facilitating higher recovery rate and reducing the mortality. It thus plays a crucial role in controlling the pandemic situation. There are scientific evidences which suggest that HRCT can be used as a diagnosis or prognostic test.[29] Based on the study findings, it can be safely claimed that HRCT, when used in combination with other diagnostic tests, plays a crucial role in controlling the pandemic situation.

Limitations:

Firstly, it's a record-based study where authors have analyzed the available secondary data and so only a limited amount of information was available. Authors acknowledge the limitation in ruling out other causes of pneumonia on CT scan. We also acknowledge limitation in converting CT severity score from 2 different methods of reporting into 3 simple categories.

Conclusion:

Present study included 41034 HRCT scan as part of COVID19 screening among test negative symptomatic patients, which reported 27.63% scans as positive. Age group wise positivity shows increasing trend while Gender wise difference in positivity was statistically not significant. Analysis of CT severity score shows that majority i.e., 66.15% had Mild, 26.07% had moderate and 7.78% had severe lung involvement. This screening helped in isolation/admission of many suspected cases which resulted into reduced transmission and better control of the pandemic wave. HRCT, when used in combination with other diagnostic tests, plays a crucial role in controlling the pandemic situation.

Declaration:

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Conflict of Interest: Nil

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Study of Risk Factors Associated with Neonatal Septicemia and Its Bacteriological Profile at one of the Tertiary Care Hospitals of Gujarat, India

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Abstract:

Introduction: Neonatal sepsis is a leading cause of morbidity & mortality in developing countries especially like India. As per involvement of different organisms, mortality rates differ among neonates. So, early detection of causing organism along with the identification of risk factors helps to prevent mortality among Neonates in India. **Objectives:** To study the risk factors associated with neonatal septicemia and its bacteriological profile at one of the tertiary care hospital of Gujarat. **Method:** The study was prospective observational research study in which purposive sampling technique was used to identify the 106 neonates blood culture positive to sepsis admitted in NICU of one of the tertiary care hospital in Gujarat in time period of 1 year from Nov 2021 to Oct 2022. **Results:** Out of 106 neonates, common factors associated with neonatal septicemia were gender, prematurity, law birth weight, gestational age & onset of septicemia. Meconium stained liquor, Pregnancy induced hypertension and Oligohydramnios were the commonest maternal risk factor associated with neonatal sepsis. Blood culture proven sepsis in neonatal septicemia was predominantly caused by Gram negative organism Klebsiella pneumonia. **Conclusion:** Neonatal septicemia is more common in preterm and low birth weight neonates. Early onset septicemia is more common which can be curtailed by clean vaginal deliveries. Prematurity and low birth remains the major presentation for admission in NICU followed by respiratory distress syndrome. Maternal risk factors like meconium stained liquor, pregnancy induced hypertension oligohydramnios, & leaking per -vaginal are associated With increase in the incidence of neonatal septicemia.

Keywords: Blood culture, Bacteriological profile, Maternal risk factor, Neonatal septicemia

Introduction:

A bacterial infection remains an important cause of morbidity and mortality in neonates. It might be possible to reduce these factors by early detection and appropriate management.[1] Neonatal septicemia or sepsis neonatorum refers to systemic infection of the new born.it is characterized by a constellation of nonspecific symptomatology in association with bacteremia. Prompt recognition, appropriate antimicrobial therapy and judicious supportive care are the key determinants of positive outcome in this serious pediatric emergency.[2]

Septicemia in neonates can results in sepsis which means clinical syndrome of bacteremia present with systemic sign and symptoms of infection in age between births to 28 days of life, also manifested by isolation of bacterial pathogens which can able to gain access into blood stream causing early onset septicemia which occurs in the first 72 hours of life or late onset septicemia which occurs after 72 hours of life in neonates. [3]

There are several factors which have been found that can increase the risk of septicemia in neonates. These factors includes age, gender, convulsion,

glucose level, late onset sepsis, lack of antenatal checkup and care, pre-term labor, low birth weight, fever, socio-economic conditions and lack of hygiene.[4] Due to lack of knowledge and availability during pregnancy some women do not visit for antenatal checkup therefore missing an opportunity of screening and treatment for infections which can be transmit to their neonates. In developing countries due to home delivery or delivery conducted by birth attendants can increase the risk of newborn developing septicemia. These all factors needs appropriate management to prevent transmission of septicemia in neonates. [5]

Neonatal septicemia is caused by bacteria which include: Klebsiella Pneumoniae, Staphylococcus Aureus, E. coli, Group B streptococci and Acinetobacter Baumannii etc. Birth weight, prematurity, infections, birth asphyxia and other factors like antenatal factors can lead to incidences of septicemia in neonates.[6]

Neonatal sepsis is a leading cause of morbidity and mortality in developing countries especially like India. As per involvement of different organism, mortality rates differ. So, early detection of causing organism can helps to prevent morbidity and mortality rates in India among Neonates. [7]

Thus, the study has been carried out to contribute to the research for neonatal septicemia. The present study was conducted with the aim to study risk factors in terms of maternal as well as neonatal and bacteriological profile from blood culture among neonates.

Method:

The hospital based descriptive study was conducted between November 2021 to October 2022. All the neonates admitted within study duration in NICU of one of the tertiary care hospital in Gujarat who is having septicemia confirmed on blood culture enrolled in this study. Thus, total 106 sample size was achieved after considering inclusion and exclusion criteria for this study. All the newborn with age between 0-28 days, who have clinical symptoms suggestive of septicemia including fever, respiratory distress, not taking feed, low birth weight,

prematurity, poor cry, convulsions, meconium stained liquor with positive blood culture admitted in one of the tertiary care hospital of Gujarat was included in the study. Neonates with severe congenital illness were excluded. Also, neonates whose blood culture sample collected after initiation of antimicrobial therapy were excluded from the study. Parents of neonates who have given informed consents for their neonates were subjected to an interviewer guided questionnaire to collect information of clinical and demographic data. The questionnaire consisted of demographic details such as age, sex, date of birth, place of birth, term of gestation, birth weight, antenatal history, family history, feeding history, birth history, medication history, complications occurred during delivery, congenital disorders etc. The clinical data were collected from hospital record card of neonates. Ethical permission has been taken from the Institutional Ethical Committee.

After taking informed assent from parents of neonates blood was collected from venipuncture site by using following steps: (1) apply 1% to 2% tincture of iodine or povidone–iodine and allow to dry for 1 to 2 minutes (povidone–iodine) or 30 seconds (tincture of iodine), and (2) remove the tincture of iodine with a 70% alcohol wash. Draw 3 ml of blood and add it into blood culture bottle. The blood culture bottle contains Brain heart infusion broth with SPS anticoagulant.

Results:

Neonatal septicemia was more common in male (54.71%) than in female (45.29%) neonates. Neonatal Septicemia were more common in preterm neonates (60.38%) than in term neonates (39.62%). Neonatal Septicemia were more common in low birth weight (<2500gms) babies (70.76%) than in (>2500gms) babies (29.24%). Early onset septicemia was more common (51.9%) in neonates than Late onset septicemia (48.1%). Neonatal septicemia was more common in newborn delivered with vaginal mode of delivery (52.8%) than Lower Segment Caesarean Section (LSCS) (47.2%).(Table 1)

Meconium stained liquor (MSL) (15.5%) and Pregnancy induced hypertension (PIH) and

Table 1: Distribution of Neonatal Risk Factors among Study Participants (N=106)

Variables	Frequency (%)
Gender	
Male	58 (54.71%)
Female	48 (45.29%)
Gestational age	
Full term	42(39.62%)
Preterm	64(60.38%)
Birth weight (grams)	
>2500	31 (29.24%)
<2500	75 (70.76%)
Categories of Low birth weight (n=75) (grams)	
ELBW (<1000)	05 (6.6%)
VLBW (<1500)	26 (34.6%)
LBW (<2500)	44 (58.6%)
Onset of septicemia	
Early onset (<72hrs of life)	55 (51.9%)
Late onset (>72 hrs of life)	51 (48.1%)
Mode of Delivery for Septicemic Neonates	
Vaginal	(52.8%)
LSCS	(47.2%)

Oligohydramnios (5.8%) were the commonest maternal risk factor associated with neonatal sepsis. (Table 2) Outcomes of 106 neonates with septicemia was total 78 neonates gets discharged, other 19 neonates are died due to septicemia while 9 neonates have taken DAMA from the hospital.

In this study Gram negative bacteria (61.3%) were the prominent pathogen causing septicemia followed by gram positive bacteria (38.7%). From the gram negative bacteria Klebsiella Pneumonia (30.18%) was predominant followed by Acinetobacter Baumannii (17.92%). On either side, MRCONS (13.20%) was the predominant followed by Enterococcus Faecalis (12.26%) from the gram positive bacteria. (Table 3)

Discussion:

Bacteriological profile plays noteworthy role for effectual management of neonatal septicemia. It is vital to identify appropriate treatment for septicemia and also for periodic epidemiological survey of causative bacterial agent. In this study, all 106 cases of septicemia were blood culture positive. The rate of incidence of gram negative & gram positive was 61.3% & 38.7%.

The finding of present study that male neonates (54.71%) are more predisposed to sepsis was comparable with other studies like, Khandharkar et al (54%),[8] Vinod kumar et al (58.5%),[9] Zakariya et al (58.3%)[10] and R. Sriram et al (66.1%).[11] A study in the tertiary care hospital of Multan by R. Aftab et al,

Table 2: Distribution of Septicaemic Neonates according to Maternal Risk Factors (N=106)

Maternal Risk Factor	Frequency (%)
Meconium Stained Liquor (MSL)	16 (15.5%)
Pregnancy Induced Hypertension (PIH)	6 (5.8%)
Oligohydroamnios	6 (5.8%)
Young Primi Mother	4 (3.9%)
Leaking Per-Vaginal	4 (3.9%)
Pre-eclampsia	4 (3.9%)
Severe Anemia	3 (2.9%)
Non-Progression of Labour (NPL)	3 (2.9%)
Covid-19 Positive	2 (1.94%)
Placenta Previa	1 (0.97%)
Neonates with no any maternal Risk Factor	57 (53.7%)

Table 3: Distribution of Neonates according to Bacteriological Profile from Blood Culture Report (N=106)

Organism	Culture Positive Cases (%)
Klebsiella Pneumonia	32 (30.18%)
Acinetobacter Baumannii	19 (17.92%)
Methicillin-Resistant Coagulase-Negative Staphylococci (MRCON)	14 (13.20%)
Enterococcus Faecalis	13 (12.26%)
Escherechia Ecoli	11 (10.37%)
Coagulase-Negative Staphylococci (CoNS)	8 (7.5%)
Staphylococcus Aureus	4 (3.77%)
Pseudomonas SPP.	3 (2.83%)
MR Staphylococcus Aureus	1 (0.9%)
Streptococcusspp.	1(0.9%)

has also reported 55.8% male and 44.2% female neonates in culture proven sepsis.[12] A study Hoque et al conducted in Bangladesh, has also having similar finding like us, with male preponderance with M:F ratio 1.3:1.[13] Also the study done by Jimba Jatsho et al in 2020, male neonates with septicemia were 57.3% and female 42.7%.[14]

In present study, early onset septicemia was found to be higher 51.9% and Late onset septicemia 48.1% of neonates which was similar with the study done by Jimba Jatsho et al 74.1 % and 25.9% respectively for onset of septicemia.[14] The most important factor predisposing to infection is prematurity. Preterm infants have a 3-10 fold higher

incidence of infection than full-term infants. Premature babies have less immunogenic ability to resist and combat infections; also require prolonged intravenous access and other invasive procedures that impair barrier and clearance mechanisms, so they are at highest risk of acquiring sepsis. Vinod Kumar et al showed 58.5% pre-mature neonates, which was quite comparable with present study (60.38%) in having more pre-mature neonates with sepsis.[9] Study done by Georgia Anna Sofouli in 2023 also showed neonatal septicemia in 45 preterm neonates and 18 term neonates with blood culture positive in derivation study and 70 preterm neonates and 24 term neonates with blood culture positive in validation study.[15]

Neonatal sepsis is a frequent complication of very low birth weight (VLBW) infants and it is an important cause of neonatal morbidity and mortality. According to various studies carried out at different part of the country at different time, has showed Gram Negative organisms as the commonest one responsible for sepsis in India. But the results shows variation in different geographical area. In present study, most common organism causing neonatal sepsis was Gram negative organisms. In this study most predominant organism isolated was Klebsiella Pneumoniae followed by Acinetobacter Baumannii, Escherichia Coli, Staphylococcus Aureus, CONS, Pseudomonas Aeruginosa, Burkholderia and Streptococcus Species.

Neonatal sepsis is a frequent complication of very low birth weight (VLBW) infants and it is an important cause of neonatal morbidity and mortality. It is clear that the sepsis is inversely proportional to birth weight of neonates and low birth weight increases the chances of sepsis. In developing countries are at increased risk of neonatal infections because of poor intrapartum and postnatal infection control practices.

By empowering mothers to pursue antenatal care may allow the detection of factors at risk for undesirable delivery consequences such as neonatal septicemia, with that appropriate management of maternal and new born can also reduce the risk in neonates. Importance of antenatal health checkup, institutional deliveries, early and exclusive breast feeding of newborns should be promoted.

By improving qualitative care through sepsis specific guideline, strengthen infection prevention and control programme and best practices during labour, child birth and postnatal care can reduce the transmission rate of septicemia in neonates.

Conclusion:

Maternal and neonatal factors can increases the risk of neonatal sepsis. This study found that prematurity (60.38%), low birth weight (70.76%) and Meconium stained liquor (15.5%) factors to increase the risk of septicemia in neonates. This study suggests that gram negative bacteria are the leading cause of neonatal septicemia. So, the study suggests that surveillance of antimicrobial resistance is necessary & also, in the hospital antibiotic policy should be formulated. Health education is also plays a key role to reduce transmission of infection in neonates.

Declaration:

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Conflict of Interest: Nil

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Appraisal of 'Physical Activity' Patterns among Medical Students: A Cross- Sectional Study Using International Physical Activity Questionnaire -Short Form (IPAQ-SF) in Lucknow, India

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Abstract:

Introduction: The health benefits of physical activity are well established. In India, it is estimated that overall, 39.2 crore individuals are physically inactive. The trends of physical inactivity among Indian adolescent and youth populations are also alarming which implies that a huge population is at risk for developing NCDs. **Objective:** To assess physical activity levels among MBBS students. **Method:** The study was conducted at a medical institute in Uttar Pradesh. Sample size of 342 was drawn using stratified random sampling. The data collection was done based on "IPAQ- short form" using self-administered questionnaire. Data analysis was done as prescribed by the IPAQ-SF tool kit. **Results:** A total of 342 MBBS students participated in the study. Mean age of the participants was 20.86 years (Range 18-26 years). A total of 117(34.2%) medical students were found to be "insufficiently active" (Category-1),134 students (39.2%) were just minimally active (Category -2) and rest 91(26.6%) students were HEPA (Health Enhancing Physical Activity) active (Category-3). Median MET- minutes/week and Inter Quartile Range (IQR) for vigorous physical activity was 0(0-640), for moderate activity it was 60(0-320) and for walking it was 462(297-924). Overall total physical activity MET- minutes/week and IQR was 942(401-2066). The median and (IQR) values for sitting were 10(8-12) hours/day. **Conclusion:** The study reveals that a noteworthy proportion of the participants do not meet the recommended levels of physical activity, indicating a pressing public health concern. Findings necessitate the importance of behaviour change activities to promote physical activity in the study population.

Key Words : IPAQ-SF, MBBS Students, Physical Activity Levels

Introduction

The health benefits of physical activity are well established and include a lower risk of diseases like cardiovascular disease, hypertension, type-2 diabetes, and even some cancers. Regular engagement in physical activity brings positive effects on mental health, postpones the onset of dementia, and can help in the maintenance of a healthy weight.[1-5] In recognition of this strong association between physical activity and major non-communicable diseases(NCDs), World Health Organization (WHO) aims to bring a 10% relative reduction in the prevalence of insufficient physical activity by 2025, as one of the nine global targets to improve the prevention and treatment of NCDs.[6]

The health benefits of a physically active lifestyle during adolescence and early adulthood are also well documented. It includes improved cardiorespiratory and muscular fitness, bone and cardiometabolic health, along with positive effects on weight status.[7] Current evidence indicates that many of those health benefits carry forward in adulthood also.[4,7] There is significant amount of evidence suggesting a positive impact of physical activity on cognitive development too.[8] Approximately 39.2 crore individuals are physically inactive in India. This is a staggering figure and implies a huge population which is at higher risk for developing diabetes and other non-communicable diseases.[9] This underscores the urgent need to improve overall physical activity levels and specific focus to increase recreational physical activity. This could go a long way in curtailing the risk of diabetes and other NCDs in India.

The trends of physical inactivity among Indian adolescents are also alarming as more than 76% of adolescents were found to be insufficiently physically active.[10]There is a dearth of information regarding the levels of physical activity among medical students in the state of Uttar Pradesh, as the literature search yielded limited studies on this specific topic. Considering the immense benefits of Physical Activity in decreasing the risk of non-communicable diseases, the present study is an attempt to understand the levels of physical activity among medical undergraduates in a tertiary health care institute of Uttar Pradesh using IPAQ-SF.

Method:

This observational study was planned and conducted at a medical institute in Uttar Pradesh, India from April 2022 to October 2022. The sample size for the study was calculated using the formula for single proportion with finite population N= [DEFF*Np(1-p)]/ [(d/Z$^2_{1-\alpha/2}$*(N-1)+p*(1-p)].[11] Taking hypothesized overall prevalence of insufficient physical activity as 76.6% [10], absolute error of 5%, design effect of 1.5, a finite population of 750 in four batches of MBBS students in the college, value of Z statistic for the level of significance 0.05 as 1.96 and assuming a 10 percent non-response rate, sample size was calculated to be 334. The design effect of 1.5 was assumed considering equal within-stratum variance. Stratified random sampling was utilized to cater the requisite sample size.

Study Design and Procedure: Students from different phase of medical training (first year to final year) were considered as separate strata for inclusion. Out of the four batches two batches (strata) were chosen randomly. Students from first year and final professional part-1got randomly selected for inclusion in the study. In the second stage the students in both the batches constitutedthe sampling frame and a number was assigned to all of them. 334 students were selected randomly from the sampling frame using random number generated using Microsoft excel software. Informed consent was sorted from the participants.The research team provided comprehensive information to the participants regarding the research study. The students who agreed to participate in the study were screened for any apparentlocomotor disability limiting physical activity or they were asked for any acute illness like fever, gastroenteritis etc or any injury, thus limiting theirphysical activityin last seven days. Based on exclusion criteria, a total of 5 such students were excluded from participation in the research study.

The data collection was done on "IPAQ – Short form" which serves as a common instrument that can be used to obtain internationally comparable data on health–related physical activity using self-administered online Google form.[12] Link was sent to the selected students and they were asked to respond in next 48 hours. All the participants were asked to fill the forms honestly by choosing the best option describing their levels of physical activity against each of the seven questions in the IPAQ-SF proforma. If no response was received within next two days, the link was shared to remaining number of students, again chosen by random selection.

A total of 353 forms were received, as few students who did not respond initially, filled the form after a gap of few days. Excluding the partially filled eleven forms, a total of 342 responses were included in the final analysis.

Study Instruments:

International Physical Activity Questionnaires - Short form (IPAQ-SF): The International Physical Activity Questionnaires -Short form (IPAQ-SF) comprises a set of 7 questions.[12]This questionnaire has questions about walking, moderate-intensity activities, and vigorous intensity activities done in last one week. The frequency (measured in days per week) and duration (time per day) of physical activities were collected separately for each specific type of activity. Computation of the total score requires summation of the duration (in minutes) andfrequency (days) of walking, moderate-intensity, and vigorous-intensity activity.[12]

Another measure of volume of physical activity was computed by weighting each type of activity by its energy requirements defined in METs (Metabolic equivalent of tasks) to yield a score in MET minutes. One metabolic equivalent (MET) is defined as the amount of oxygen consumed while sitting at rest and is equal to 3.5 ml O_2 per kg body weight per minute.[13] The MET concept represents a simple and practical method for expressing the energy cost of physical activities as a multiple of the resting metabolic rate. MET minutes were calculated using formulas as follows, Walking MET-minutes/week = 3.3 × walking minutes × walking days, Moderate MET-minutes/week = 4.0 × moderate-intensity activity minutes × moderate days, Vigorous MET-minutes/week = 8.0 × vigorous-intensity activity minutes × vigorous-intensity days. A combined total physical activity MET-min/week were calculated as the sum of Walking + Moderate + Vigorous MET-min/week scores.[12] Total activities days were calculated by summing up the days spent in all different categories of physical activity separately.

Overall, three levels of physical activity were categorized as" Inactive, Minimally Active and HEPA active (Health Enhancing Physical Activity)". Inactive (Category-1) is the lowest level of physical activity. Those individuals who didnot meet criteria for Categories 2 or 3 (described ahead) were considered insufficiently active. Minimally Active (Category-2)was classified as just sufficientlyactivehaving any one of the following 3 criteria: a) 3 or more days of vigorous activity of at least 20 minutes per day OR b) 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR c) 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week. Individuals meeting at least one of the above criteria were defined as achieving the minimum recommended levels to be considered minimally active.

A separate category was labelled"HEPA" level,which is a more active category (Category-3).The two criteria used to classify a person as HEPA active were: a) vigorous-intensity activity on at least 3 days achieving a minimum of at least 1500 MET-minutes/week OR b) 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week.

Data Analysis: Data cleaning and other data processing guidelines were followed as prescribed by IPAQ-SF toolkit, like first excluding outlier data, then secondly, recoding high values to four hours, and finally describing minimum amounts of activity to be included in analyses. Following these rules ensured that highly active people remained highly active, while decreasing the chances that fewer active individuals may be coded as highly active.[12]

Data entry was done in Microsoft office Excel version 2010, followed by data analysis using SPSS and plots were drawn using "R" statistical software. Data collected with IPAQ was reported both as a categorical and continuous measure and reported as

median MET minutes as physical activity pattern follows non-normal distribution of energy expenditure. To test significance Chi square test and't'test were used. A "p" value was considered significant at <.05 level.

Ethical Aspects: Ethical approval was taken before commencing the research study. The research proposal was approved by institutional IEC committee.

Results:

A total of 342 MBBS students participated in the study, comprising of 197 male and 145 female students. The mean age of the participants was 20.86±1.71 years. A total of 117(34.2%) students were found to be "insufficiently active" (Category-1), 134 students (39.2%) were just minimally active (Category -2) and rest 91(26.6%) of students were HEPA active (Category-3). The median MET-minutes/week and IQR for total physical activity for

Table1 : General Characteristics of Study Population according to Physical Activity (N=342)

Variables	Total (N=342) n (%)	Low active (n= 117) n (%) [%]	Sufficiently active (n =225) n (%) [%]	p value
Age (in years)				
15-19	73(21.2)	36 (49.3) [30.8]	37 (50.7) [16.4]	0.002[#]
20-29	269(78.8)	81 (30.1) [69.2]	188 (69.9) [83.6]	
Gender				
Males	197(57.6)	64 (32.5) [54.7]	133 (67.5) [59.1]	0.43[#]
Females	145(42.4)	53 (36.6) [45.3]	92 (63.4) [40.9]	
BMI (kg/m^2)				
<23.0	210[61.4]	77 (36.7) [65.8]	133 (63.3) [59.1]	0.23[#]
≥23.0	132[38.6]	40 (30.3) [34.2]	92 (69.7) [40.9]	
Professional Year				
First professional	166(48.5)	76 (45.8) [65.0]	90 (54.2) [40.0]	0.001[#]
Final professional part I	176(51.5)	41 (23.3) [35.0]	135 (76.7) [60.0]	

( ) row percentage [ ] column percentage, # chi-square test

male students was 1188 (450-2506) and for female students it was 773(396-1476) (Figure1). Association is observed between age of the participants, and their year of professional education in MBBS with their physical activity levels. Gender and BMI values were not associated significantly with the physical activity levels in the study population. (Table 1)

The median MET- minutes/week and Inter Quartile Range (IQR) for vigorous physical activity was 0(0-640), moderate physical activity 60(0-320) and walking 462 (297-924). Overall total physical activity MET- minutes and IQR was 942(401-2066) (Figure 2, Table 2). The mean sitting hours were 10.36±3.08 (95% CI 10.03- 10.67) per day. The median and mode values for sitting were 10 hours/day (IQR 8-12) and 12 hours respectively (Range- 4-16 sitting hours/day). Quantum and pattern for different types of physical activity in mean MET minutes per week was also estimated. (Table 3)

Discussion:

Non-communicable diseases have emerged as a significant global epidemic in many regions, primarily attributed to a substantial shift in lifestyles

Figure 1: Box plots depicting median MET- minutes per week (MMPW) of overall physical activity levels in male (N=197) and female (N=145) students

Table 2: Median Minutes of Various types of Physical Activities

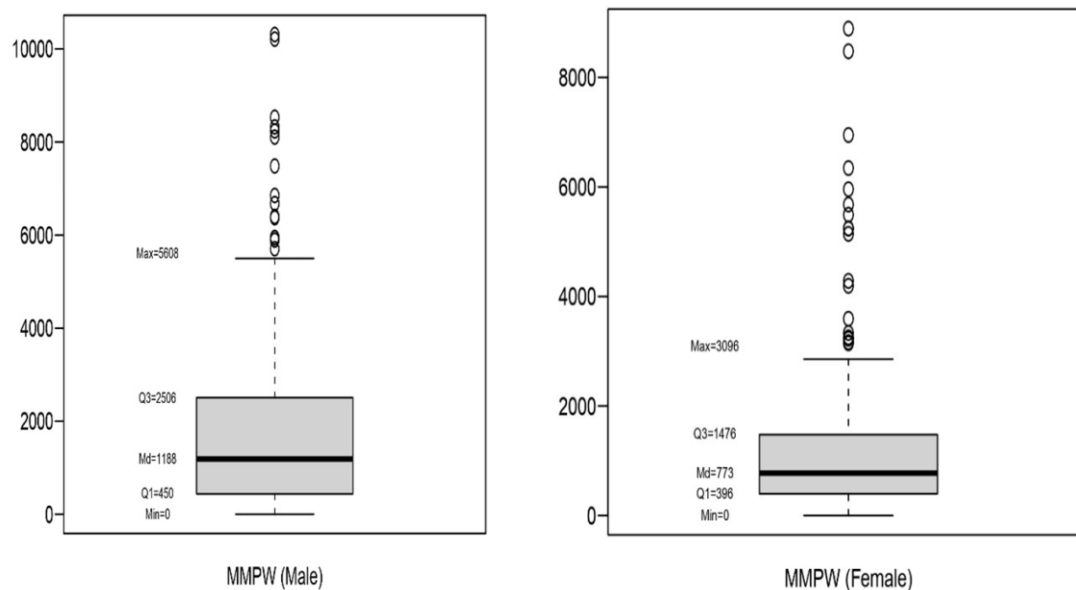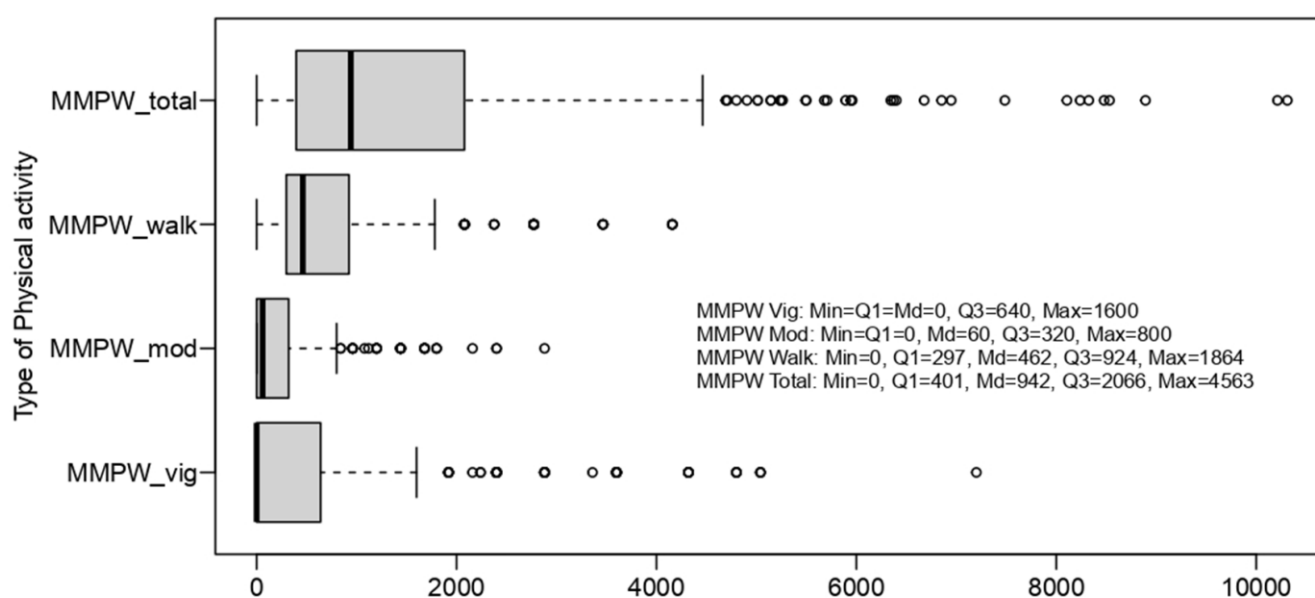| Study Variable	Total	Vigorous Activity	Moderate Activity	Walking
	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)
Total activity days per weeks	9 (7-13)	00 (0-3)	1 (0-4)	7 (6-7)
Number of minutes spent per day	50 (25-90)	0 (0-30	(10 (0-20)	30 (15-40)
Total acitivty (MET-min/week)	942 (401-2066)	0 (0-640)	60 (0-320)	462 (297-924)

Table 3: Mean Minutes of various types of Physical Activities

Study Variable	Total	Vigorous Activity	Moderate Activity	Walking
	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Total activity days per weeks	9.6±4.6	1.7±2.2	2.1±2.3	5.9 ±1.9
Number of minutes spent per day	71.56±71.58	20.1±32.7	16.2±25.3	35.3±34.3
Total acitivity (MET-min/week)	1671.1± 1934	657.1±1241	258.7±458.1	754.4±758.2

Figure 2: Box Plot depicting various types of physical activity in study population

MMPW Vig: Min=Q1=Md=0, Q3=640, Max=1600
MMPW Mod: Min=Q1=0, Md=60, Q3=320, Max=800
MMPW Walk: Min=0, Q1=297, Md=462, Q3=924, Max=1864
MMPW Total: Min=0, Q1=401, Md=942, Q3=2066, Max=4563

characterized by diminished physical engagement as a common finding. The health benefits provided by physical activity are immense and well known too.[1-5] Yet, it is observed that globally and in India without any exception that, a large proportion of populations are either physically inactive or not active up to the recommended levels.

The present study found that 117(34.2%) of participants were insufficiently active (Category-1), 134 (39.2%) students were just minimally active (Category -2) and rest 91(26.6%) students were HEPA (Health Enhancing Physical Activity) active (Category-3). On clubbing the Category-II and Category-III together, 225 students (65.8%) can be considered as sufficiently active. In relation to

inadequate levels of physical activitydiverse outcomes have been observed across various research studies, indicating variability in the findings across the country. Research study conducted among medical students in Bangalore revealed that 15.4% of the students demonstrated limited levels of physical activity.[14] It is worth mentioning that study conducted among Indian Students found 51% students having low physical activity levels.[15] Study done among medical students at Manipal found that 62% of medical students were exercising currently.[16]

As per the IPAQ guidelines,just Sufficient physical activity (Category-II) was observed in 39.2% of the participants in present research study. But students in this category are not enough

physically active for total "Physical Activity" when all domains are considered. This is because IPAQ-SF measures total physical activity whereas the recommendations for physical activity are based on activity over and above usual daily activities (Usually leisure time or recreational). For this reason, any aberration in physical activity in this category of students (Category-II) may bring them to insufficiently active category(Category-I). When combining population for Category-I and category-II students, 73.4% of study might be considered at risk for physical inactivity related health issues.

Amongst the study population, median hours for sitting were 10 hours/day (IQR 8-12hours/day). Prolonged sitting has been equated with not just obesity, heart disease and diabetes but also with depression, cancer, and joint/muscle problems. It is so harmful that its repercussions have been equated to that of smoking. Other studies have also documented substantial sedentary behaviour in medical students. Study done among medical students in south India found average sitting hours as 7.06 hours per day.[14] We did not find gender wise significant difference in physical activity levels which contrasts with the study done earlier in medical students in Bangalore.[14]

Conclusion:

The study findings indicate a noteworthy portion of the subjects failed to achieve the suggested thresholds of physical activity, while concurrently exhibiting prolonged periods of sedentary behaviour, primarily characterized by sitting. These outcomes underscore a critical public health issue that necessitates urgent attention. Consequently, the significance of implementing behaviour modification interventions aimed at enhancing physical activity levels among the targeted study cohort is emphasized.

Recommendations:

To promote physical activity, it is advisable to address issues which commonly act as a barrier for physical activity among youth like lack of resources to engage in physical activity, lack of skills and fear of injury in general. Health awareness in the form of motivational talks, lectures, IEC and addressing the above-mentioned issues can bring the desired changes to physical activity promotion. Motivation enhancement strategies along with creating enabling environment can be a wonderful strategy for bringing out the desired change in positive health behaviour.

Limitations:

One of the limitations of study is that it only included students from two out of the four batches of the MBBS program at the institute. The inclusion of students from all four batches would have provided a more comprehensive representation of the study population. The findings of study may not accurately reflect the characteristics and diversity of the broader community of students as only the medical students from a single medical institute were included in the study. As a result, the validity of findings is limited only to the specific study population examined in this research. It is imperative to acknowledge that the reliance on only the self-reported physical activity data, obtained through the IPAQ-SF, may introduce a potential for bias in the findings of this study.

Declaration :

Funding: Nil

Conflict of Interest: Nil

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Prevalence and Socio-Demographic Factors Associated with Anemia among Females of Age Group 10-45 Years in a Rural Population of Gurugram, Haryana

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Abstract:

Introduction: Anemia is the most common nutritional deficiency disorder in the world. Its Prevalence is inordinately higher among developing nations, because of unfavorable socio- demographic factors and indigent access to healthcare services. Therefore, it is pertinent to find the prevalence of anemia and its associated factors. **Objective:** To find out prevalence and socio- demographic factors associated with anaemia among females of age group 10-45 years in a rural population of Gurugram, Haryana. **Method:** A cross sectional study was conducted in villages under PHC Garhi Harsaru in Gurugram, Haryana among 452 females of age group 10-45 years by two stage random sampling technique. **Results:** The mean age of the study subjects was 25 ± 6.39 years. The overall prevalence of anemia among women of age group of 10-45 years was found to be 62.39%. Joint family, lower literacy, and low socioeconomic status were found to be statistically significant risk factors for anaemia among study subjects. **Conclusion:** The prevalence of anemia was very high; therefore attempts should be made to sensitize the rural population through health and nutrition education, information, education and communication (IEC) and appropriate behaviour change communication (BCC) activities.

Key Words : Anemia, Joint family, Literacy status, Prevalence, Socio-economic status.

Introduction:

Anemia accounts for a majority of the nutritional problems across the world among women. Repeated childbearing, lactation, and poor access to nutritional supplements following menarche may cause or further exacerbate anaemia.[1] Thus, the aetiology of anemia in India is multifactorial and population-specific. Its prevalence is inordinately higher among developing nations, because of low socioeconomic status and indigent access to healthcare services.[2] World Health Organization (WHO) defines anemia as a condition in which the haemoglobin (Hb) content of blood is lower than normal as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiencies.[3] Based on concentration of haemoglobin in the blood, anemia is classified into three groups as mild, moderate or severe.[4] Although it occurs in all the age groups, prevalence is on a higher side among women of childbearing age.[5] Iron deficiency (lower concentration of hemoglobin) is influenced by various socio-demographic factors, may it be location, gender, ethnicity, income, low nutritional education, and lower socioeconomic Status.[6-8]

The National Family Health Survey-5 (NFHS-5) data reported that anemia (Hb<12 gm/dl) is widely

prevalent among all age groups, and is particularly high (nearly 57.0%) amongst the most vulnerable group (15-49 years) in all women.[9] Data also show that there was an increment of 4% in the prevalence of anemia among women aged 15-49 years from NFHS-4 (53%) to NFHS-5 (57%).

High prevalence of anemia is an indicator of poor health and nutritional status. It has potential to negatively affect the social and economic development of Nation.[10] Most researches on anemia in India have focused on urban settings.[11] But very few are on rural settings. So, it is pertinent to find the prevalence of anaemia and its associated factors in rural settings. Adolescent period(10-19 years) is an important phase of life as it marks the beginning of menstrual cycle and reproduction.

In view of the above, this study was carried out to estimate the prevalence and determine socio-demographic factors associated with anemia among females of age group 10-45 years in rural population of Gurugram, Haryana.

Method:

This cross-sectional study was conducted in villages under PHC Garhi Harsaru which is situated in district Gurugram of Haryana State. The study area comprises of 45729 individuals distributed across 14 villages. The study was conducted among females of age group 10-45 years residing in rural area under PHC Garhi Harsaru of Gurugram district Haryana.

Sample size estimation was done by taking prevalence of anemia among 10-45 years females as 50%[12] at 95% confidence interval and 5% desired level of precision. The sample size came out to be 384. However, 452 females participated in this study.

Out of 14 villages under PHC Garhi Harsaru, 7 villages were selected using simple random sampling (lottery method). A complete list of 4975 households in these seven villages was obtained and serially numbered. This was served as a sampling frame. From the list of population of every village received from Anganwadi, total 220 households were selected by probability proportional to size (PPS) sampling method which was expected to give sample size of

452 females for the study. A random number of 20 was selected which was less than the sampling interval.[23] This number gave the location of first household in the first village. Then second household was selected by adding the sampling interval i.e. 23 to the first household. If the next household was found to be locked, then household adjacent to it was taken. From the selected households all females who were in the age group of 10-45 years and gave their consent to participate in the study were enrolled for the study. Consent was taken from the parents or local guardian for the study subjects who were below 18 years. Females below 10 years and above 45 years of age, suffering from chronic diseases, and not willing to participate in the study were excluded from the study.

The approval from the Institutional Ethical Committee of SGT University was obtained before commencing the study. A written informed consent was obtained from each subject for their participation after the nature of the study was fully explained to them in their local languages. The primary tool in this study was a predesigned and pretested interview schedule for recording of personal and sociodemographic profile of study subjects. The tool was administered by the investigator herself. Another tool used in this study was Sahli´s Haemoglobinometer for estimation of hemoglobin concentrations of eligible subjects. Haemoglobin estimation was done by trained laboratory technician and public health nurse of the community medicine department. In Sahli's acid hematin method[13] blood was mixed with an acid solution so that hemoglobin is converted to brown-colored acid hematin. This was then diluted with water till the brown color matched that of the brown glass standard. The hemoglobin value was read directly from the scale. Grades of anaemia for various age groups were classified as per WHO.[14] Modified B.G. Prasad socioeconomic scale was used to classify the socioeconomic status of the study participants.[15]

Collected data was first entered in the MS Excel spreadsheet and coded appropriately. Prevalence of anemia was estimated in terms of percentage and

association between socio-demographic factors with anemia was analyzed using Pearson's Chi-square test of significance. The level of significance was considered at p< 0.05. All statistical analyses were performed using Epi info 7.2 software.

Results:

Majority (65.27%) of the females were in the age group of 20-30 years. Overall, 95.79% were Hindus. Maximum number (84.51%) of females was married, 13.72% were unmarried, and 1.77% was widow/separated. It was found that majority (50.44%) had education till secondary level. The occupational status revealed that maximum number (41.15%) of the study subjects was involved in semiskilled work (including housewives). Majority (78.54%) of the study participants belonged to joint family. Maximum number (32.08%) of participants belonged to class II socioeconomic status, followed by class I (28.32%), class III (23.23%), class IV (13.27%), and class V (3.10%).

The, overall prevalence of anemia among study participants was 62.39%. The prevalence of anaemia was highest in 20-30 years age group i.e. 62.71%, followed by 62.63% in 31-45 years and 60.34% in 10-19 years age group. The prevalence was found to be almost equal in all age groups. On severity scale, 33.41%, 23.23%, and 5.75% had mild, moderate, and severe anaemia, respectively. (Figure 1) Severe degree of anemia was maximally prevailed (13.79%) among 10-19 years of age group. (Figure 2)

Table 1 shows that the prevalence of anemia was significantly (p=0.006) higher among those belonged to joint families (65.63%) as compared to those belonged to nuclear families (50.52%). However, age, religion, and caste did not emerge as risk factors for anemia in this study.

Table 2 shows that the prevalence of anemia was significantly (p = 0.0001) highest (88.61%) among those who were illiterates followed by primary level of education (84.69%). The prevalence was

comparatively lower among those who were educated upto secondary level (48.25%) and those who were graduate and above (40.43%). Occupation of the study subjects had no association with anemia (p=0.753).

The prevalence of anemia was the lowest (53.91%) among those belonged to socioeconomic class I. Increase in the prevalence of anemia was noted towards the lower socioeconomic status categories. The association between socioeconomic status with anemia was found to be statistically significant (p =0.0006).

Figure 1: Distribution of study subjects according to severity of anaemia (N=282)
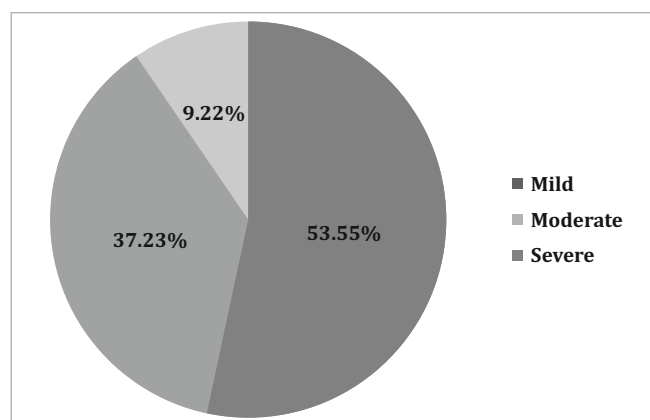
Figure 2: Severity of anaemia according to age groups (N =282)
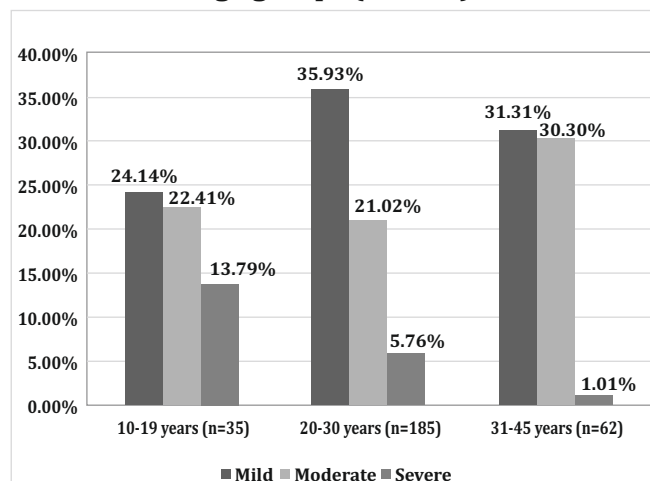
Table 1: Association of Demographic Factors with Anemia among Study Subjects (N=452)

Parameters	Non anemic N=170 (%)	Anemic N=282 (%)	Chi square	p value
Age group (in year)				
10-19	23 (39.66%)	35 (60.34%)	0.1188	0.9423
20-30	110 (37.29%)	185 (62.71%)		
31-45	37 (37.37%)	62 (62.63%)		
Religion				
Hindu	164 (37.88%)	269 (62.12%)	0.514	0.7734
Muslim	3 (27.27%)	8 (72.73%)		
Others	3 (37.50%)	5 (62.50%)		
Caste				
General	50 (44.64%)	62 (55.36%)	3.9736	0.1371
OBC	76 (37.25%)	128 (62.75%)		
SC/ST	44 (32.35%)	92 (67.75%)		
Type of family				
Joint	122 (34.37%)	233 (65.63%)	7.4208	0.006
Nuclear	48 (49.48%)	49 (50.52%)		

Table 2: Association of Occupation and Literacy Status of Subjects with Anemia (N=452)

Parameters	Non anemic N=170 (%)	Anemic N=282 (%)	Chi square	p value
Occupation				
Student	21 (41.18%)	30 (58.82%)	1.9479	0.7543
Skilled	25 (32.89%)	51 (67.11%)		
Semiskilled	75 (40.32%)	111 (59.68%)		
Unskilled	28 (34.57%)	53 (65.43%)		
Unemployed	21 (36.21%)	37 (63.79%)		
Literacy Status				
Illiterate	9 (11.39%)	70 (88.61%)	73.02	0.0001
Primary	15 (15.31%)	83 (84.69%)		
Secondary	118 (51.75%)	110 (48.25%)		
Graduate and above	28 (59.57%)	19 (40.43%)		

Discussion:

The present study was a community based cross sectional study conducted among females in the age group of 10-45 years residing in the rural areas of P.H.C Garhi Harsaru. A total of 452 females were recruited for the study. The mean age of the study subjects was 25 years ±6.39; 65.27% study subjects belonged to the age group of 20-30 years and 21.90% belonged to the age group of 31-45 years. This finding is comparable with that reported in the study by Aarti Acharya et al[16] at Rural Health Training Centre Udairamsar, Bikaner, Rajasthan in which majority (64.44%) of the subjects belonged to the age group of 20-25 years.

In the present study 62.39% of the subjects were found to be anemic. The National Family Health Survey (NFHS-5) conducted in 2019-21 in Haryana and Gurgoan reported prevalence of anemia to be 60.4% and 67.5%, respectively in women aged 15-49 years which is almost similar to the present study.[17,18] This is consistent with the studies done by Reshmi PS et al[19] where prevalence of anemia among adolescent girls was found to be 59% and Pande et al[20] where prevalence was reported to be 61%. However, a study by Chandrakumari et al[21], reported a lower prevalence (48.63%) of anemia in a rural setting among a group of adolescent girls attending a tertiary care hospital. In the present study overall, 33.41% of the study subjects had mild anemia, 23% had moderate anemia and 5.75% had severe anemia. Majority of the subjects presented with mild anemia. In a study done by Seth RK et al[22] in rural women of UP mild anemia was observed among 55.4% of the women, 34.3% and 10.3% of the women were moderately and severely anemic, respectively. Kamath R et al[23] found that, out of 55.8% anemic women in a tribal area, 3.5% were severely anemic, 19.4% were moderately anemic 32.9% were mildly anemic.

However, in a study conducted by Ramesh Verma et al[24] in a rural block of Northern India, 18.8% were mildly anemic, 27.6% were moderately anemic and 2.5% were severely anemic. So, it may be inferred that depending upon the study area and study population the severity of anemia varies slightly.

In the present study, severity of anemia decreased with increasing age. A study by Seth RK et al[22], also reported the prevalence of anemia was higher among the women of age 15-19 years than higher age groups. On the contrary, many studies reported that anemia increases with increasing age. In a study carried out by Raghuram V et al[25] among women in the reproductive age group in a rural area in South India found that prevalence of anemia was more among women aged 26-40 years. Similarly in a study done by Ramesh Verma et al[24] in a rural block of Northern India the prevalence of anemia was found to be higher in the age group of 20-29 years. However, in a study done by Mishra P et al[26] in Ambala found that prevalence of anemia was more between 15-30 years as they are under childbearing stage or they have given births, which is a major sensitive time to cause anemia. Many studies did not show any significant relationship with age similar to the results of the present study. For example, Kaur et al[2] in their study in adolescent girls of rural Wardha, reported that age did not contribute significantly.

In the present study it was found that subjects of joint family had higher prevalence of anemia as compared to that of nuclear family and this difference was statistically significant (p value<0.05). Similar trend was documented by Bisoi S et al [27] in a study among pregnant women in West Bengal. Unequal distribution of food in joint family and eating last or after serving the husband may contribute significantly to maternal anemia.

Anemia was significantly (p value<0.05) higher in subjects who were illiterates (88.61%) as compared to those who had primary and higher level of education (56.83%). Similar findings were also observed by Morsy and Alhady[28] where they found that women with a higher education were less frequently anemic than illiterate women or women with a primary or secondary education. The reason for finding more anemia with low level of education as found by most researcher could be attributed to the simultaneous presence of low incomes, poor living conditions, poor diet, thereby, predisposing them to higher levels of anemia. This difference may be due to the availability of high quality food with better socio-economic status. Significant disparities were observed in prevalence of anaemia in females of different socioeconomic status. It was observed that females in the family belonging to socioeconomic class III, IV, V have higher prevalence of anemia than females belonging to the family of higher socioeconomic class as per modified B G Prasad scale and this difference was found to be statistically significant (p value<0.05).

Conclusion:

The overall prevalence of anemia among women of age group of 10-45 years was found to be 62.39%. Low socioeconomic status, joint family, and low literacy status were found to be a statistically significant risk factor for anemia. Other demographic factors did not emerge as significant risk factor in the present study.

Recommendations:

A significant association of anemia with socio-economic status suggests a need to develop strategies to improve the socio-economic status of the population through poverty alleviation programs. Women education should be promoted, especially in lower socioeconomic communities, to ensure overall healthy lifestyle and lower risk of anemia related concerns.

Declaration:

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Conflict of Interest: Nil

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Burden of Osteoporosis and The Factors Associated with it among the Patients Attending an Outreach Camp in a Rural Area of District Baramulla, Kashmir: A Cross-Sectional Study

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Abstract:

Introduction: Osteoporosis is the most common bone disease affecting a number of people of both genders. Since bone loss a start occurring in young age soon after the peak bone mass is achieved, the problem needs to be evaluated in young people as well. **Objectives:** 1. To find out the burden of osteoporosis among the patients attending an outreach camp in a rural area of district Baramulla 2. To determine the factors associated with Osteoporosis among study population. **Method:** This was a cross-sectional study conducted in March 2022. An out-reach camp was conducted in a rural area of district Baramulla by researchers from a tertiary care hospital at Srinagar. Bone mineral density (BMD) test was performed free of cost on all the participants. All the participants coming on the day were selected as study participants. The t score corresponding to the BMD was obtained and the frequency of osteoporosis was determined. **Results:** About 45.1% of the participants belonged to the age-group of 41-60 years. There was a female preponderance (63%). The prevalence of osteoporosis in this study was found out to be 20.9% and that of osteopenia was 47.3%. There was an inverse relationship between BMD and age, with BMD being lower in older age groups. The relationship between menopause and osteoporosis was statistically significant with 48% postmenopausal women having osteoporosis compared to 9.1% women premenopausal women with osteoporosis. **Conclusion:** The frequency of osteoporosis and osteopenia among the attendants of the camp was substantial. The bone mineral density was lower in the older age groups probably because of the age related bone loss. Consequently, the prevalence of osteoporosis was higher in older age groups. Frequency of osteoporosis was more among postmenopausal women than among the premenopausal women.

Key words : Bone Mineral Density, Menopause, Osteopenia, Osteoporosis

Introduction:

Osteoporosis is the most common bone disease affecting a number of people of both genders. The prevalence of osteoporosis increases with age compromising the bone strength in elderly people. It increases the bone fragility and risk of fractures.[1] Osteoporosis is characterized by low bone density and deterioration of bone tissue. It can be a silent problem until a fracture occurs which can cause a number of secondary problems including death. Osteoporosis affects more women after the menopause due to estrogen deficiency then pre-menopausal women.[2] Men are also afflicted by the problem, hence it's not a women's disease only.[3] There are a number of secondary causes of osteoporosis including lifestyle changes like vitamin D deficiency, high salt intake, smoking, alcohol intake,

immobilization, physical inactivity, low calcium intake; genetic disorders like cystic fibrosis, glycogen storage diseases, Riley day syndrome, osteogenesis imperfecta, Marfan's syndrome; endocrine disorders like Cushing's syndrome, thyrotoxicosis, hyperparathyroidism, diabetes mellitus etc.[4] Osteoporosis is a public health problem in India as well. India is the second most populated country in the world with more than 100 million people over 50 years of age.[5] It was estimated that in 2013, 50 million people in India are either osteoporotic or have low bone mass.[6]

Most of the current studies have focused on finding the prevalence in menopausal women or elderly population. Since bone loss a start occurring in young age soon after the peak bone mass is achieved, therefore the problem needs to be evaluated in young people as well. Therefore the present study was conducted with the objective to find out the burden of osteoporosis among the patients attending an outreach camp in a rural area of district Baramulla and to determine the factors associated.

Method:

This was a cross-sectional study conducted in March 2022. An out-reach camp was conducted in the rural area of Sheeri Baramulla. The doctors from a tertiary care hospital at Srinagar provided free treatment to the patients with any orthopaedic complaint. Besides, bone mineral density test was performed free of cost on all the participants to find out the prevalence of osteoporosis in general population in the area. All the participants (91) coming on the day were selected as study participants. Informed consent was taken from all the participants.

Bone mineral density assessment:

Calcaneal quantitative ultrasound was performed by using heel ultrasound of left foot of the participant. A trained assistant helped with the assessment of BMD. The assessment was performed automatically by the machine within 20 seconds and was noted in a file. Based on T-score of BMD obtained,

participants were labeled as normal (T-score above -1 SD), osteopenia (T-score -1 to -2.5 SD) and osteoporosis (T-score <-2.5 SD).[7]

Statistical analysis

Data was entered in the Microsoft excel 2010 software and analysed using SPSS version 23. Data was summarized as frequency and percentages for qualitative variables and as mean and standard deviation for quantitative variables. Chi-square test or Fisher's Exact test was employed to determine the relationship between two qualitative variables. p value<0.05 was considered statistically significant.

Results:

A total of 91 participants who attended the camp were taken into the study. Table 1 depicts the general characteristics of the study participants. About 45.1% of the participants belonged to the age-group of 41-60 years and 21% were elderly aged ≥61 years. There was a female preponderance with about 63% of the study participants being females. About 29% of the participants were overweight and another 21% were obese. For 81% of the participants income per month was up to Rs.20000. About 20% of the study participants were smoking currently.

A total of 6.6% of the participants were diabetic and 33% were hypertensives where as about 10% were hypothyroid. About 43% of the females were postmenopausal. About 64% were taking calcium supplements regularly. (Table 1)

The prevalence of osteoporosis in our study was found out to be 20.9% and that of osteopenia was 47.3%. (Table 2)

The relationship between BMD and age was found out to be inverse with BMD decreasing in higher age groups. (Table 3,Figure 1). In the post-hoc Tukey HSD test, the significant difference lied between <40 and 41-60 age-group with the <40 year age group having a higher BMD, a mean difference of 0.12 BMD (p=0.023). The difference also lies between between<40 and >/=61 age-groups with the former having a higher BMD and a mean difference of 0.201 was found out (p=0.001).

Table 1: Socio-demographic characteristics of the study participants

Characteristic	Group	Frequency (N=91)	Percentage
Age-group (years)	≤40	31	34.1
	41-60	41	45.0
	≥61	19	20.9
Gender	Male	34	37.4
	Female	57	62.6
Marital status	Not married	5	5.5
	Married	86	94.5
BMI	18.5-24.9	46	50.5
	25-29.9	26	28.6
	≥30	19	20.9
Individual Income per month (in Rupees)	≤20000	74	81.3
	20001-40000	10	11.0
	40001-60000	5	5.5
	60001-80000	2	2.2
Smoking status	Current smoker	18	19.8
	Non-Smoker	71	78.0
	Past smoker	2	2.2
Diabetes	Yes	6	6.6
	No	85	93.4
Hypertension	Yes	30	33.0
	No	61	67.0
Hypothyroidism	Yes	9	9.9
	No	82	90.1
Menopause (n=57)	Yes	25	43.9
	No	32	56.1
Calcium supplement intake	Yes	58	63.7
	No	33	36.3

Table 2: Distribution of the participants based on the presence of osteoporosis and osteopenia

T-score categories	N (%)	Mean BMD	Standard deviation
Normal	29(31.9)	1.139	0.183
Osteopenia	43(47.2)	0.883	0.064
Osteoporosis	19(20.9)	0.697	0.054
Total	100.0	0.926	0.199

Table 3: Relationship of bone mineral density with age of the study participants

BMD	N	Mean(SD)	df	F	p value
≤40	31	1.02(0.156)	2	7.5	0.001
41-60	41	0.90(0.182)			
≥61	19	0.82(0.233)			

Figure 1: Relationship of Bone Mineral Density with age
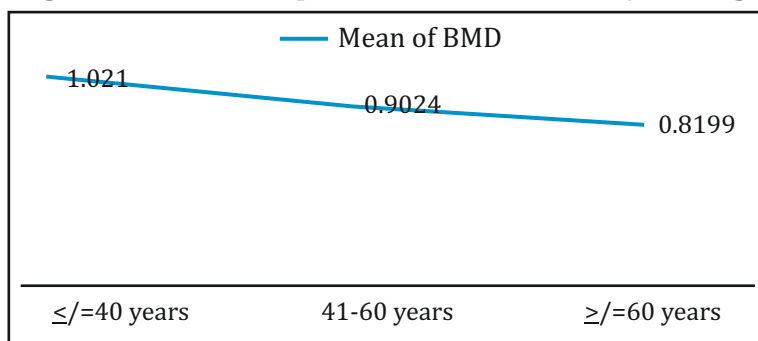
Table 4: Relationship of Osteoporosis with General Characteristics

Variables		T_score_category			χ² value (p value)*
		Normal	**Osteopenia**	**Osteoporosis**	
Age group (Years)	≤40	18(58.1%)	12(38.7%)	1(3.2%)	23.24(<0.001)*
	41-60	8(19.5%)	24(58.5%)	9(22.0%)	
	≥61	3(15.8%)	7(36.8%)	9(47.4%)	
Marital status	Married	28(32.6%)	40(46.5%)	18(20.9%)	0.52(0.850)
	Unmarried	1(20.0%)	3(60.0%)	1(20.0%)	
BMI	18.5-24.9	15(32.6%)	17(37.0%)	14(30.4%)	6.18(0.186)
	25-29.9	8(30.8%)	15(57.7%)	3(11.5%)	
	≥30	6(31.6%)	11(57.9%)	2(10.5%)	
Gender	Female	17(29.8%)	25(43.9%)	15(26.3%)	2.73(0.255)
	Male	12(35.3%)	18(52.9%)	4(11.8%)	
Monthly Income of Patient (INR)	≤20000	26(35.1%)	31(41.9%)	17(23.0%)	5.82(0.396)
	20001-40000	1(10.0%)	8(80.0%)	1(10.0%)	
	40001-60000	1(20.0%)	3(60.0%)	1(20.0%)	
	60001-80000	1(50.0%)	1(50.0%)	0(0.0%)	
Smoking status	Smoker	7(38.9%)	10(55.6%)	1(5.6%)	3.19(0.202)
	Non-smoker	22(30.1%)	33(45.2%)	18(24.7%)	
Diabetes	Yes	1(16.7%)	3(50.0%)	2(33.3%)	1.11(0.567)
	No	28(32.9%)	40(47.1%)	17(20.0%)	
Hypertension	Yes	7(23.3%)	13(43.3%)	10(33.3%)	4.49(0.106)
	No	22(36.1%)	30(49.2%)	9(14.8%)	
Hypothyroidism	Yes	2(22.2%)	4(44.4%)	3(33.3%)	1.16(0.596)
	No	27(32.9%)	39(47.6%)	16(19.5%)	
Calcium supplements	Yes	20(34.5%)	24(41.4%)	14(24.1%)	2.32(0.313)
	No	9(27.3%)	19(57.6%)	5(15.2%)	
Menopause	Yes	3(12.0%)	10(40.0%)	12(48.0%)	13.05(0.001)*
	No	14(43.8%)	15(46.9%)	3(9.3%)	

*Statistically Significant

Table 4 shows the relationship of osteoporosis with general characteristics. Osteoporosis was found to be most prevalent in elderly age-group of more than 60 years with a prevalence of 47.4% and least prevalent in the age-group of up to 40 years with a prevalence of 3.2%. The relationship of age with osteoporosis was statistically significant (p<0.001). No relationship was found with gender (although the prevalence in females was higher 26.3% vs 11.5% in males). No relationship was found between the occurrence of osteoporosis and marital status, BMI, income, comorbidities (like diabetes, hypertension and hypothyroidism), calcium supplement intake, and smoking status.

The relationship between menopause and osteoporosis was statistically significant with 48% postmenopausal women having osteoporosis compared to 9.1% women premenopausal women with osteoporosis.

Discussion:

It is of utmost importance to know the prevalence of osteoporosis and osteopenia because a person may himself not be aware of such bone problems and at the same time these problems put the individual at increased risk of fractures. These fractures may sometimes be silent and pose a problem later in life.[8] Therefore the present study was conducted to know the status of osteoporosis and osteopenia in general population and factors associated with it. In our study the prevalence of osteoporosis was found out to be 20.9% and that of osteopenia was 47.3%. In a recent study by Madhuchhanda Patnaik et al, 37.9% of the individuals were osteopenic and 22.45% were osteoporotic.[9] Similar findings were noted by Ramalingaiah et al with the prevalence of osteoporosis and osteopenia as 21.46% and 39.73% respectively.[10] Another study by Sushrut Babhulkar the prevalence of osteopenia and osteoporosis was 49.9 and 18.3% respectively.[11] Another retrospective record based study by Neelam Kaushal et al found out the prevalence of osteopenia and osteoporosis to be 34% and 6.9% respectively.[12]

In our study we found that as the age increases, the prevalence of osteoporosis increases and the prevalence was higher in females although the relationship with gender was not statistically significant. Similar findings were noted in the study conducted by Madhuchhandha Patnaik et al.[9] It has been observed that peak bone mass is attained at around the age of 25 years and there after the bone mass begins to decrease.[13]

The other factor associated with the occurrence of osteoporosis in our study was menopause. After menopause the prevalence was higher with 48% postmenopausal women having osteoporosis compared to 9.1% women premenopausal women. Research suggests that after menopause there is accelerated loss of bone mass each year.[14,15] We did not find a statistically significant relationship between the occurrence of osteoporosis and other general characteristics like marital status, BMI, income, diabetes, hypertension, hypothyroidism, calcium supplement intake, and smoking status. Smoking, low calcium intake and diabetes have been found to be the secondary causes of osteoporosis.[16,17]

Conclusion and recommendations:

The frequency of osteoporosis and osteopenia among the attendants of the camp was substantial. The bone mineral density was lower in the higher age groups probably because of the age related bone loss. Consequently, the prevalence of osteoporosis was higher in older age groups. Frequency of osteoporosis was more among postmenopausal women than among the premenopausal women. Awareness should be generated among common people regarding osteoporosis, more so among the groups who are at higher risk including older people and postmenopausal women. Preventive measures should be applied at an earlier stage and healthy lifestyle should be adopted so as to decrease the prevalence of osteoporosis.

Limitation of the study :

The limitation of the study was smaller sample and a camp based approach. The prevalence in the community cannot be ascertained by this study.

Declaration:

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Conflict of Interest: Nil

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Interpersonal Challenges Faced by Community Health Officers at Health and Wellness Centres in Delivery of Comprehensive Primary Health Care at Tribal Setting of Gujarat: A Mixed Methods Study

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Abstract:

Introduction: Multi skilling and expansion of the team members involved in operationalizing Sub-Health Centres (SHCs) to Sub-health Centres-Health and Wellness Centres (SHC-HWCs) in India tends to be a challenge. New roles are being assigned to Community Health Officer (CHO) in an exponential manner. **Objective:** To identify the team-based interpersonal challenges encountered by Community Health Officers (CHOs)in terms of human relations in professional forefront and extract probable solutions from them for overcoming these challenges **Method:** It was a sequential type of mixed method study done in two-step process, quantitative survey of the defined indicators at SHC-HWCs followed by group discussion among CHOs for qualitative data. Quantitative survey was aimed at finding utilization of services. (triangulation of both the data) whereas qualitative survey was aimed at finding out interpersonal challenges faced for adequate service delivery. Authors targeted to collect data from all the SHC-HWCs (N=53) in Dahod block for quantitative and qualitative survey. **Results:** The service utilization related to Maternal health and child health; childhood and adolescent health were found in range of 90-95%, followed by community participation (70%). The qualitative analysis of data revealed that CHOs were overburdened by their superiors and perceived lack of co-operation, dedication, and accountability from fellow team members. **Conclusion:** Utilization of certain services like non-communicable diseases (NCD), palliative care, mental health was found to be suboptimal. Significant lack of motivation and coordination were possibly some of the contributors.

Keywords : Adolescent, Child, Health facilities, Motivation, Non-communicable diseases, Social responsibility

Introduction:

The National Health Mission (NHM), the country's flagship health systems strengthening programme, particularly for primary and secondary health care envisages "attainment of universal access to equitable, affordable and quality health care which is accountable and responsive to the needs of people."[1] Investments of NHM during earlier phases were targeted to strengthen Reproductive and Child Health (RCH) services and to contain the increasing burden of communicable diseases. While such a focus on selective primary health care interventions

enabled improvement in key indicators related to RCH and selected communicable diseases, the range of services delivered at the primary care level did not consider increasing disease burden and rising costs of care on account of chronic diseases. India is witnessing an epidemiological and demographic transition, where non-communicable diseases such as cardiovascular diseases, diabetes, cancer, respiratory, and other chronic diseases account for over 60% of total mortality.[2]The provision of Comprehensive Primary Health Care (CPHC) reduces morbidity and mortality at much lower costs and significantly reduces the need for secondary and tertiary care.[1]

Government of India launched Ayushman Bharat as its flagship program in February 2018. A target of operationalization of 1,50,000 Ayushman Bharat Health and Wellness centres (AB-HWCs) by transforming existing SHC (Sub Health Centres) and PHCs (Primary Healthcare Centres) into AB-HWCs to provide comprehensive primary healthcare closer to home with the principle being "time to care" to be no more than 30 minutes.[1]

Strengthening the primary health care team at the SHC and PHC level (by posting a Community Health Officer/ Mid-Level Health Provider), multiskilling and capacity building, expanded services and health and wellness promotion were operationalized at the State level.[1] There is also a rapid growth in health care facilities at government sector, thus reducing the out-of-pocket expenditure (OOPE) from 69.4% of total health expenditure found in 2004-05 to 48.8% OOPE out of total health expenditure in the year 2017-18.[3] The Government is committed towards providing Universal Health Coverage in order to reduce financial burden and a gate-keeping mechanism for reducing the burden of tertiary care hospitals through public health facilities.[1] Until now, the SHCs and PHCs were meeting only 20% of the health care needs and were providing limited services pertaining to RCH (reproductive and child health) care and some

communicable diseases.[4] These SHCs and PHCs are equipped with an appointment of a newly trained cadre, viz. Community Health Officers (CHOs), earlier termed as Mid-level Health Providers. These CHOs are in leadership position of the SHC-HWCs and will undertake all the major activities and initiatives started by the Ministry of Health and Family Welfare (MoHFW).[1]

With previous experience of improvement of RCH indicators with introduction of ASHAs; similar strategy is being taken for improvement in other healthcare parameters by addition of CHOs. The program is underway but the issues arising are not known yet. The CHOs being a new, young cadre, with new packages to be rolled in, the challenges that might be anticipated are not yet studied for this particular cadre in carrying out their day-to-day activities. The objective of this study is to identify the challenges encountered by CHOs in terms of human relations in professional forefront and extract solutions from CHOs for overcoming these challenges.

Method:

It was a sequential type of mixed method study done in two-step process; quantitative survey of the defined indicators at SHC-HWCs followed by group discussion among CHOs for qualitative data. There were 51 SHC-HWCs functioning in Dahod block during the time of study. All SHC-HWCs (N=51) were selected for the purpose of the study.[5]

Step 1: Quantitative survey: The quantitative survey was undertaken in 44 out of 51 SHC-HWCs in Dahod block of Dahod district in the month of August-September 2021. The data could not be extracted from 7 (13.72%) SHC-HWCs as CHOs were not available at these SHC-HWCs at the time of survey. A comprehensive tool of indicators was prepared after discussion with the research team and by referring various National guidelines which included the basic indicators for service delivery in pregnancy and childbirth, neonatal and infant health, childhood and

adolescent health care including immunization, family planning, contraceptive services and other reproductive care services, communicable services, non-communicable diseases, screening and basic management of mental health ailments, care for common ophthalmic and Ear, Nose and Throat (ENT) problems, elderly and palliative care services and emergency medical services. A comprehensive list of indicators was defined and expected targets were set against each indicator as per the State specific guidelines. Each indicator had a maximum score of 100 and minimum score of zero. Each SHC-HWC performance in this scale, i.e the score of MCH indicator was 100 and the performance of X HWC of Dahod was 80. Hence the performance of this particular HWC, while delivering MCH indicator was 80%. Similarly, the other indicators like neonatal, childhood and adolescent health was calculated for this particular HWC "X". The data for these indicators were extracted from the registers available at the SHC-HWCs and refined further for the purpose of the study. Feasibility of the tool was assessed and pilot testing and modification of the tool was done accordingly to meet the study purpose. Data was collected by trained investigators on hard copy and entered in Excel sheet and performance score of each indicator was measured against predefined target and converted into percentages. All the indicators surveyed were plotted on a web-diagram.

Step 2: Qualitative data collection: The CHOs from all the 51 SHC-HWCs were invited for this activity and some were unable to come due to various reasons. The total number of CHOs participated were 46 (90%). They were asked to free list the problems regarding the challenges and prospective solutions for increasing the service delivery under each healthcare packages which were shown in the web-diagram. (Figure 1) Each CHO was provided a chit paper, asked to form pairs and discuss the problems as well as the prospective solution. After the discussion, the CHOs were asked to draw a stakeholder's matrix and mention the challenges

they faced during their routine work within their team members and their inter-personal relationship. The chits were then collected and analyzed by public health professionals trained in qualitative research by free listing approach manually.[6] The findings were shared with the State Nodal Officer and team. No names or any kind of identifiers were mentioned in the responses to maintain anonymity of the CHOs. Institutional Ethics Clearance was obtained from Bhaikaka University (IEC/BU/2022/Ex. 06/25/2022).

Results:

Quantitative: As per the survey data obtained from 44 out of 51 SHC-HWCs in Dahod block, the calculation of each indicator was done against set target defined as per the National and State specific targets and actual value was obtained in percentage (achieved versus target). The indicators of each service packages were clubbed together and average percentage was calculated for 44 SHC-HWCs. It was found that the utilization of services related to Maternal health; Neonatal and infant health; childhood and adolescent health were in range of 90%, followed by activities related to community participation which scored 70%. The other service utilization viz. family planning, contraceptive services and reproductive care services, non-communicable diseases, screening and basic management of mental health ailments, care for common ophthalmic and ENT problems, elderly and palliative care services and emergency medical services could not achieve the target and remained at or below 20%.(Figure 1)

Qualitative: As seen in Table 1 and Table2, CHOs experienced lack of co-operation from Multipurpose Health Workers, ASHAs and Anganwadi workers in service delivery and perceived that these health workers lack dedication and accountability. They reported of being overburdened by their superiors with multiple tasks, unachievable targets and were seldom offered guidance and support. They also reported mockery at workplace by their peers but the

Figure 1: Web diagram showing the performance on cPHC indicators
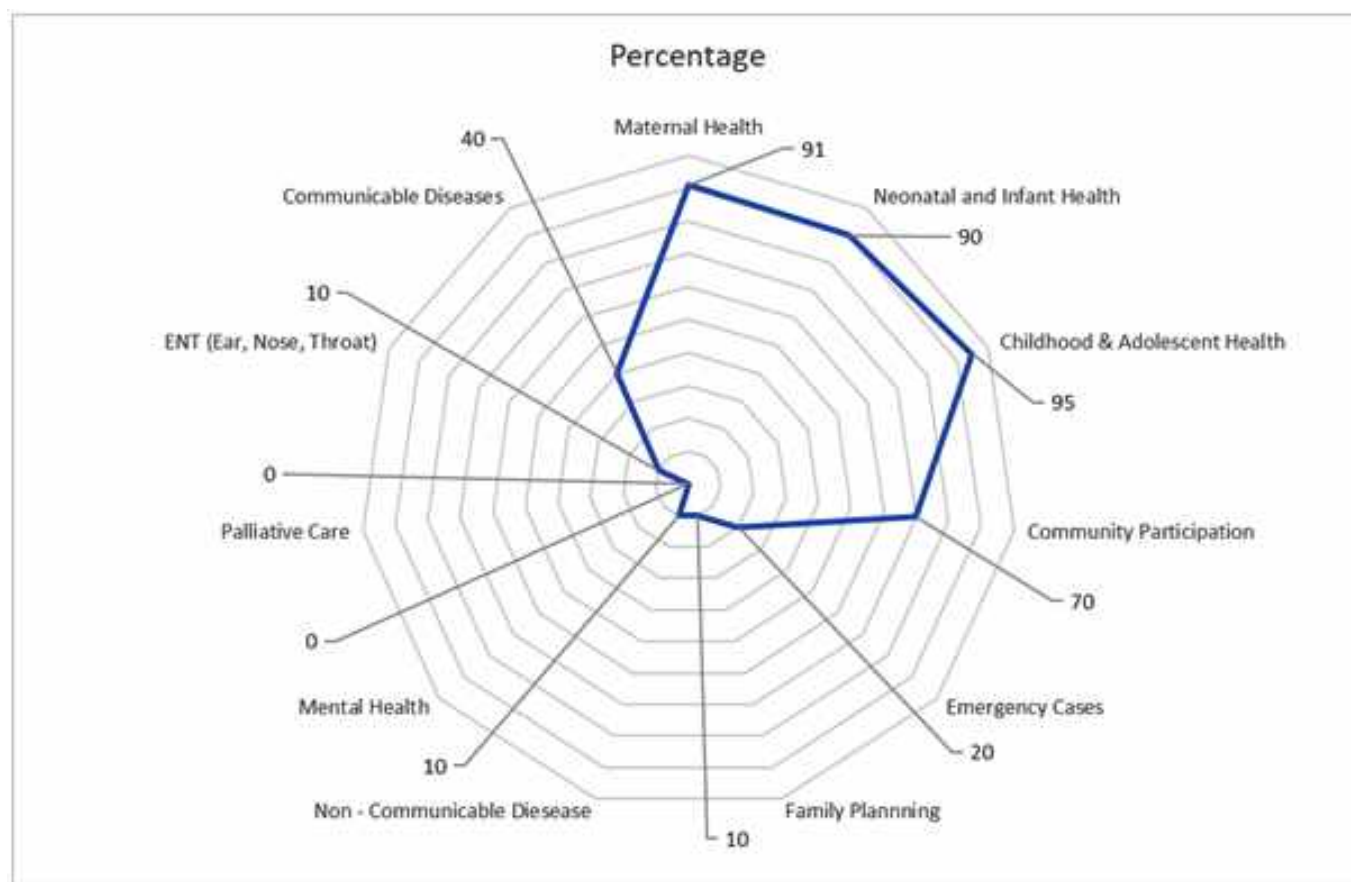
instances were seldom. The CHOs suggested solutions with respect to team dynamics, management, and field activities. Provision of team support and working together as a team (23.9%), to conduct weekly meetings (13.4%) were among the major responses received under the team dynamics. It was also mentioned that the superiors should provide guidance and motivation to the CHOs. They reported that, as being a new cadre, support and handholding was needed from the district officials as well as the medical officer of their respective PHC-HWCs for establishing them as the leaders of the SHC-HWCs. About 16.7% CHOs emphasized on conducting IEC (Information, Education and Communication) activities at the community level to increase the service delivery. Around 15.2% and 13.4% CHOs mentioned FGD (focus group discussions) followed by brainstorming for possible solutions with key stakeholders in the community and regular campaigns for poor performing activities

will give positive result respectively. They mentioned that regular VHSNC (Village health sanitation and nutrition committee) meetings with active participation with community members and health care level workers will show the expected results.

Discussion:

It was found that the progress on indicators on maternal health, neonatal and infant health, childhood, and adolescent health were almost universal. Progress on indicators related to NCDs was far from satisfactory. Perceived lack of dedication among team members and lack of mutual co-operation were reported as major hurdles in delivery of CPHC services by the CHOs. It is also to be emphasized that overburdening the CHOs with multiple assignment other than laid guidelines can decrease the work efficacy. Similar results were reported in a study conducted on Anganwadi workers. They offered suggestions related to team

Table1: Stakeholder matrix with CHOs representing perceived barriers in delivery of cPHC services (N=46)

Multipurpose workers	Salience(%)	Superiors (District/ Block team members)	Salience(%)
Lack of cooperation with the CHOs in conducting field activities and reporting	22(47.82)	Overburdening with other tasks instead of regular activities	12(26.08)
Lack of dedication towards their work	16(34.78)	Lack of support and guidance	8(17.39)
Less accountable	7(15.21)	Transfer of the CHOs frequently	5 (10.86)
Frequent deputation and transfers of trained MPHWs	6 (13.04)	Pressurizing the staff for completion of tasks and reaching the target	3 (6.5)
Lack of communication	2 (4.2)	Lack of interest	2 (4.4)
Lack of knowledge	2 (4.3)	Lack of knowledge	1(2.18)
Absenteeism	1 (2.17)		
Lack of respect for fellow colleagues	1 (2.18)		
ASHAs and Anganwadi Workers	**Salience (%)**	**Colleagues**	**Salience(%)**
Lack of dedication towards their work	18 (39.13)	No respect of the post	2 (4.4)
Lack of support to the CHOs	14 (30.43)	Not supportive	2 (4.4)
Lack of accountability	7 (1.52)	Lack of motivation	1 (2.18)
Lack of motivation for starting new initiatives	2 (4.4)	Troublemakers	1 (2.18)
Old age	1 (2.18)		

Table 2: Solutions Offered by CHOs to Increase the Service Delivery For Various Service Delivery Packages (N=46)

Category	Solutions	Salience (%)
Team dynamics	To work in a team with each other's support	11(23.91)
	To start team huddle meetings	6 (13.04)
	To create an environment of motivation for all the team members through guidance from superiors.	3 (6.52)
Management	Capacity building of the team members with continuous and effective refreshers' training	4(8.69)
	Preparing of the micro plan of the activities in a team and work as per the decided plan	4(8.69)
	To follow the rules of change management and incorporate it in their day-to-day activities	3(6.52)
	Timely indentation of required materials, medicines, and logistics.	3 (6.52)
	To develop collaborative leadership skills	3(6.52)
Field activities	IEC activities at the community level	16(34.78)
	Focused group discussions with the stakeholders and community members	7 (15.21)
	Regular campaigns for poor performing activities.	6 (13.04)
	Regular VHSNC meetings at the community level with active participation with the health care workers and the community members	5 (10.86)

dynamics, change management, and field activities. Authors found complete registration of pregnancies and institutional deliveries to be 100% which is near to NFHS-5 i.e., 97.7% and 94.3% respectively. The full immunization coverage rate for children up to 23 months of age was found to be 94.7% in comparison to 85% as per NFHS-5.[7] It was found that only a limited set of services viz, maternal and child health & some services in communicable diseases were provided in full-fledged manner by the SHC-HWC as shown in the web-design (Figure1) which has also been mentioned by Ved et al.[8]

The other important indicators pertaining to services for non-communicable diseases, mental illness, palliative care, and emergency care were to be worked upon and to the best of our knowledge, any studies supporting the current our findings were not found. As the component of above-mentioned packages are newly introduced in the Comprehensive Primary Health Care and roll-out of these expanded service packages is still in initial phase which may be the major reasons for low performance. Henceforth, more innovative and context specific evidence-based approaches are to be instilled in developing these areas.

Another study revealed similar findings that strengthening the team dynamics was a key solution mentioned by the CHOs for increasing the service delivery.[9] It was also mentioned that conducting IEC activities at the field level, focused group discussion with the stakeholders and community members, regular campaigns for poor performing activities and VHSNCs activities will help in increasing the indicators which has taken a back seat as also mentioned by Nath et al.[10]

Strengths and limitations of the study:

The strength of current study was that the challenges and solutions mentioned were according to the CHOs' perspective rather than policy makers' perspective. However, the responses obtained would have been more dynamic if other cadres like multipurpose workers, medical officers etc. were part of the study. Data of various indicators were collected from registers available at the SHC-HWCs rather than from the community which was beyond the scope of the study which might have led to variations in the survey results.

Conclusion and Recommendation:

The study suggested that utilization of services related to Maternal health; Neonatal and infant health; childhood and adolescent health were in range of 90%, whereas the other indicators ranged from 10 -70%. The qualitative findings highlighted the concerns of health workers in terms of poor dedication and accountability to their existing job profiles. Interpersonal issues were the crux of poor delivery of the various CPHC indicators which was directly observed as decreased utilization of certain service packages for the beneficiaries.

With inclusion of new service packages under the Comprehensive Primary Healthcare in decades old system of RCH care as well as upgradation of the subcenters into SHC-HWCs with newly trained young cadres with leadership role; achieving Universal Health Coverage can be a difficult task.

It is recommended that regular capacity building sessions on "leadership and change management" should be made a part of their professional development. An integrated approach for continuum of care and addressing community health care is required which can be attained by cooperation, teamwork, mutual respect among the team members. Further such studies can be conducted to explore the perspective of various team members for improving the service delivery of CPHC.

Declaration:

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Conflict of Interest: Nil

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Public friendliness towards Frontline Healthcare workers in Kolkata, India: Preparedness towards a future pandemic

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Abstract:

Introduction: A new wave of COVID-19 infection has hit China of late and India due to her geographical proximity is at risk. More than 700 doctors in India have died on the frontline during COVID-19. Despite their sacrifices and service, discretionary behaviour by the public have been frequently reported. **Objective:** To assess the attitude and perception towards frontline Health Care Workers (HCW's) among residents of a selected zone of Kolkata (India). **Method:** An observational study of cross-sectional design was performed in December 2022, using a pre-designed structured questionnaire, that was sent to the registered email address of the families residing in the selected area of a zone located in Southern Kolkata and response from one eligible member per family was assessed. Of 142 families residing in the area, responses from 119 families were obtained. **Results:** Most participants agreed or strongly agreed to co-operating with HCW's during door-to-door screening campaigns and supporting their families (94.8% and 83.7% respectively). Majority (74.4%) favored functioning of private clinics; however, 60.7% didn't want to allow doctors to work post-COVID recovery. Though 64.9% believed HCW's were taking adequate measures to contain disease spread, 77.8% wanted to maintain more than required 'safe distance' from them and 35.1% favored keeping them away from neighbourhood. About 67% thought HCW's were properly trained and equipped to handle COVID-19 cases (47.8%). Participants with age more than 33 years (p=0.030), males (p=0.044) and who sought health advice in last month (p=0.016) were found to have a favorable attitude. **Conclusion:** The study finds a mixed opinion in the public about HCWs. Considering the difficulties faced by HCWs, which affected the functioning of the healthcare system, this scenario can be tricky while tackling similar emergencies of the future. Hence, measures to reduce societal stigma against HCWs is of great necessity.

Keywords: Attitude, COVID-19, Health Personnel, Perception, Social Stigma.

Introduction:

The COVID-19 pandemic has seized to be a Global Public Health Emergency now, after wreaking havoc for nearly 3 years.[1] However, resurgences of new waves of the pandemic in Eastern Asia have shown that the world remains at risk.[2] India has already witnessed three waves of the COVID-19 pandemic and the World Health Organization (WHO) has warned of similar pandemics in the future.[1]

Misinformation circulating through social media and other mass media during the pandemic lead to panic reactions among general population. They were often reported to have adversely reacted to frontline health care workers (HCW) (including physicians, nurses, pharmacists and other health care staff) fighting the pandemic.[3] Negative attitude and stigma of the community lead to a non-supportive environment, making it more difficult for HCWs to render their services.

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Studying the public attitude towards HCWs is essential to create a safe work atmosphere for them before future epidemics/pandemics, which could be an impending disaster. Therefore, this study was undertaken to examine the attitude and perception towards HCW's among non-medical adult residents of a pre-selected zone in Kolkata, which had been poorly affected in the past few waves of the pandemic.[4]

Method:

This was a community-based, cross-sectional study, done in the month of December 2022. A previously declared containment zone during COVID 19 pandemic was selected purposively from the list announced by the state government.[5] The selected zone consisted of a residential complex located in Ward No. 106 of the Kolkata Municipal Corporation, with 142 families residing in it.

Sample size and sampling technique

Using the formula $n_0 = z^2pq/e^2$, and applying correction factor for finite population, the final calculated sample size (n) was calculated, with prevalence (p) of favorable attitude=50.0%, q=100-p, e=10% of p, and N=total number of families=142, sample size (n) was calculated to be 104.But, in order to achieve a larger sample size, the questionnaire was sent to the registered email address of all the 142 permanent resident families. Each family was asked to submit the filled-up questionnaire within seven days of receipt, after which, the responses were rejected. To ensure that only one response was received per family, only the first response received from each of the registered email addresses was considered, when applicable. If a health worker member responded on behalf of his/her family, the response was excluded from analysis.

Data collection questionnaire

The questionnaire was designed to assess the attitude and perception towards HCW's, with an informed consent form at the beginning. Questions on socio-demographic variables were asked, followed by questions to assess attitude and perception of the study participants towards HCW's. The questions were mentioned in the local language as well as in English. Each question asked to assess

attitude and perception had five possible responses (strongly agree, agree, no opinion, disagree and strongly disagree), graded using a Likert scale and the subjects were asked to mark the most appropriate option in each case. A scoring system was adopted with the consensus of the study team, where participants marking an option indicating favorable attitude or perception scored positive points, while marking an option indicating otherwise would score negative points.

Total individual score of a participant was obtained by adding up his/her scores from each question; maximum possible score was 32. The totaled individual scores were arranged in ascending manner and median score was calculated. An individual with total score below the median was classified as having unfavorable attitude and perception towards HCW's, while individuals scoring equal to or above the median score were classified as having favorable attitude and perception.

Data entry and Analysis

The data obtained was entered into and analyzed with Statistical Packages for Social Science (SPSS)® (SPSS Inc, Chicago, IL, USA) version 16.0. Predictability of favorable attitude and perception with selected variables was tested by Logistic Regression analysis ($P<0.05$ was considered as statistically significant)

Ethical Considerations

The study was conducted after the grant of necessary permission by the Institutional Ethics Committee of a Medical College of West Bengal, India (Ref No.: MC/KOL/IEC/NON-SPON/757/08/20, dated 06.08.2020). Anonymity of all respondents was maintained.

Results:

A total of 119 complete responses were received within the stipulated time, of which, two (2) were from health workers. Hence, analysis was carried out based on the remaining 117 responses.

Majority of the respondents were young (18-27 years age: 61.5%), having passed higher-secondary examination (54.7%). Of them, 38.5% had sought health advice from physicians in the last one month for themselves or their family members. A few (3.4%) had one or more health worker(s) as family member.(Table 1)

Table 1: Socio-demographic profile of the respondents (N=117)

	Variable	n(%)
Age (Completed years) **Mean: 32.73 Years** **SD: 15.81 Years**	18-27	72 (61.5)
	28-37	10 (8.5)
	38-47	13 (11.2)
	48-57	11 (9.4)
	>57	11 (9.4)
Gender	Male	71 (60.7)
	Female	46 (39.3)
Faith	Hinduism	95 (81.2)
	Islam	6 (5.1)
	Atheist	12 (10.3)
	Others	4 (3.4)
Marital status	Married	42 (35.9)
	Unmarried	75 (64.1)
Family	Nuclear	85 (72.6)
	Joint	32 (27.4)
Education	Higher Secondary	64 (54.7)
	Graduation	13 (11.1)
	Post-graduation	38 (32.5)
	Doctorate	2 (1.7)
Occupation	Student/ Intern/ Apprentice	42 (35.9)
	Private firm employee	23 (19.7)
	Unemployed	15 (12.8)
	Government employee	13 (11.1)
	Retired	10 (8.5)
	Self-employe	8 (6.8)
	Home maker	6 (5.2)
**Socio-economic class	Class I	I89 (76.1)
	Class II	4 (12.0)
	Class III	8 (6.7)
	Class IV	5 (4.3)
	Class V	(0.9)
Sought health advice in last month	Yes	45 (38.5)
	No	72 (61.5)

**As per the B.G. Prasad Scale, modified on March 2022

Regarding attitude towards frontline HCW's, 61.5% strongly agreed to co-operating with HCW's during door-to-door screening campaigns; 42.7% agreed to supporting the families of HCW's who were away on duty. More than half of the respondents (52.1%) strongly agreed to extending extra privileges to HCW's as a token of appreciation for the work they are doing. Most (45.3%) agreed to the idea of allowing private doctor clinics to function in the neighborhood, nearly three-fourth of the respondents were inclined towards maintaining 'safe distance' more than that is required from HCW's, with 37.6% agreeing to quarantine HCW's and their families suspected of COVID infection at a place away from the general populace. Some respondents (37.6%) said that their attitude towards HCW's as expressed by them is not dependent on the COVID-status of the concerned HCW's; 32.5% said it was liable to change and the rest (29.9%) were unsure with their reply. Of the respondents, 31.6% disagreed to allow HCWs, who previously suffered from COVID to resume work even after proven recovery. (Table 2)

Table 2: Distribution of study participants according to their attitude towards COVID frontline health workers (N=117)

Domains	Strongly agree No (%)	Agree No (%)	No opinion No (%)	Disagree No (%)	Strongly disagree No (%)
Co-operating with HCW's during door-to-door screening campaigns	72 (61.6)	39 (33.3)	4 (3.4)	2 (1.7)	0 (0.0)
Maintaining 'safe distance' from HCW's more than that prescribed is required	48 (41.0)	43 (36.8)	12 (10.3)	10 (8.5)	4 (3.4)
HCW's would not make for preferred neighbors during the pandemic	2 (1.7)	15 (12.8)	23 (19.6)	43 (36.8)	34 (29.1)
Supporting families of HCW's when they are away on duty during pandemic	48 (41.0)	50 (42.7)	14 (12.0)	5 (4.3)	0 (0.0)
It is necessary to keep HCW's and their families away from neighborhood as an extra precautionary measure	16 (13.7)	25 (21.4)	22 (18.8)	40 (34.2)	14 (11.9)
HCW's and their families should be quarantined away from general populace, if suspected of carrying COVID infection	8 (6.8)	44 (37.6)	13 (11.1)	28 (23.9)	24 (20.6)
HCW's should be extended extra privilege, as a token of appreciation	61 (52.1)	49 (41.9)	4 (3.4)	3 (2.6)	0 (0.0)
Private clinics should be allowed to operate in the neighborhood	34 (29.1)	53 (45.3)	17 (14.5)	8 (6.8)	5 (4.3)
HCW's who once suffered from COVID, should be allowed to resume work, once they have recovered	7 (6.0)	23 (19.6)	16 (13.7)	37 (31.6)	34 (29.1)

Most participants perceived that HCW's are adequately trained and equipped to handle suspected COVID-patients; 47.0% strongly agreed that HCW's are working tirelessly round-the-clock to manage the pandemic. Most (42.7%) opined that HCW's are taking adequate measures to ensure that they are not spreading infection to others. Majority (71.8%) had no opinion regarding behavior of HCW's in COVID hospitals, 11.1% disagreed with the opinion that behavior was unacceptable. (Table 3)

Median participant score for attitude towards HCW's was 4 (1.5-7). Results for age, gender and seeking health advice in last month were found to be significant (p<0.1) on Univariate regression, while others returned non-significant results. Having a health worker in family was also not found to significantly affect the results. Multivariate logistic regression analysis using all the above three variables found that all the variables were significantly predicting favorable attitude. The elderly [Adjusted Odds Ratio, i.e., AOR=2.640 (1.097 to 6.358)], males [AOR=2.307 (1.021 to 5.212)] and, participants who sought health advice in last one month [AOR=2.836 (1.216 to 6.616)] tended to have a favorable attitude; Nagelkerke's R^2 for the model being 0.16. (Table 4)

Table 3: Perception of the respondents towards the work being done by frontline health workers during COVID pandemic (N=117)

Domains	Strongly agree No (%)	Agree No (%)	No opinion No (%)	Disagree No (%)	Strongly disagree No (%)
HCW's have been adequately trained to handle suspected COVID patients	34 (29.0)	44 (37.6)	26 (22.2)	12 (10.3)	1 (0.9)
HCW's are properly equipped to handle suspected COVID patients	24 (20.5)	32 (27.3)	23 (19.7)	31 (26.5)	7 (6.0)
HCW's and health facilities are doing enough to transport and accommodate suspected or confirmed COVID cases	26 (22.2)	36 (30.8)	30 (25.6)	22 (18.8)	3 (2.6)
HCW's and health facilities are doing enough to transport and accommodate other critically ill or emergency cases	22 (18.8)	40 (34.2)	29 (24.8)	22 (18.8)	4 (3.4)
HCW's are working round the clock tirelessly to manage the pandemic situation	55 (47.0)	50 (42.7)	9 (7.7)	3 (2.6)	0 (0.0)
HCW's are taking adequate measures to ensure that they are not spreading infection to others	26 (22.2)	50 (42.7)	35 (30.0)	6 (5.1)	0 (0.0)
Behavior of HCW's is not acceptable at COVID hospitals	1 (0.9)	8 (6.8)	84 (71.8)	13 (11.1)	11 (9.4)

Table 4: Predictability of socio-demographic variables for favorable attitude towards frontline health workers during COVID pandemic (N=117)

Variable		Attitude		Total	AOR (95%) C.L.	P
		Favorable N(%)	Unfavorable N(%)			
Gender	Female	22 (47.8%)	24 (52.2%)	46	Ref	
	Male	46 (64.8%)	25 (35.2%)	71	2.307 (1.021-5.212)	0.044
Age (completed years)	≤33	40 (50.6)	39 (49.4%)	79	Ref	
	>33	28 (73.7%)	10 (26.3%)	38	2.640 (1.097-6.358)	0.030
Sought Health advice	Yes	32 (71.1%)	13 (28.9%)	45	Ref	
	No	36 (50%)	36 (50%)	72	2.836 (1.216-6.616)	0.010

Discussion:

Social stigma related to COVID-19 is "attributable to unscientific belief and improper understanding of corona virus" and many in India mistakenly believe that HCW's are a potential infection source.[6] In the present study, the public opinion was usually inclined towards maintaining safe distance from HCWs. When the current situation demands strengthening of the health systems, the negativity that HCW's are having to witness acts as a force contrary to it. These unfriendly findings are in consonance with reports from around the world in different cultural settings. In numerous locations across the globe, HCWs have faced harassment and humiliation.[7,8] The situation in India became so bad that a new Law, in the form of a Central Ordinance had to be implemented in order to based; criminalize violence against COVID healthcare workers.[9]

Nearly 40% of the respondents of this study were keen on keeping HCWs and their families quarantined away from them. People were reluctant to allow a doctor to resume work, even after s/he recovered from COVID-infection. In many countries, a phenomenon of 'mutual discrimination' had been noted since the start of the pandemic. An Indian study found nearly 85% of its respondent healthcare workers to have suffered from social stigma; nearly 50% felt unsafe while stepping outside.[10] Another study from COVID-designated hospitals in India showed 60% of doctors to perceive higher levels of stigma.[11] Stigma has proven negative impact on a health worker's performance.[12]

Evidences generated during previous outbreak point at the fact that, during any such health emergencies, social stigmatization of HCWs are a common phenomenon.[13,14] Hence, to ensure that the HCWs are physically and mentally prepared to tackle similar health emergencies in the future, pro-active measures should be taken to create a favorable scenario for them. An effective anti-stigma campaign should be mounted by the health authorities at every level, which fractures the misperception and increases the knowledge, and conveys a supporting and positive message towards HCWs. Negative and unverified reports on social media should be controlled and accurate information should be disseminated in order to eradicate social discrimination of HCWs and protect their well-being.

The findings of the current study underscore the need to follow guidelines issued by the IFRC (International Federation of Red Cross and Red Crescent Societies), WHO and UNICEF (United Nations Children's Fund) to address the issue of social stigma created in the wake of COVID-19.[15] The Ministry of Health and Family Welfare (Government of India) guidelines outlining what a responsible role entails during such a pandemic should be highlighted and followed.[16]

Limitation of the study:

The study was done on a previously declared containment zone. Having one such zone selected and not more, can be considered as a short fall.

Despite the urban and higher socio-economic setting, the responses from the elderly were less, which might have been because, in our cultural framework, the elderly still have relatively limited skill or capacity to successfully participate in surveys conducted through the online medium.

Conclusion:

In the current study, a mixed public opinion towards HCWs was noted. Majority of the respondents wanted to maintain an extra safe distance from HCW's, with some not preferring them as neighbors. Furthermore, one third of the participants wanted the HCW's and their family to be quarantined away from the general population if suspected with infection. Therefore, it is safe to comment that social stigma against HCWs is still rampant, which needs immediate attention and redressal.

Declaration:

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Awareness towards Drug Abuse and its Associated Factors in Young Adults of Kashmir, North India: A Cross Sectional Study

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Abstract:

Introduction: Drug abuse has been defined as an extreme desire to obtain and use increasing amounts of one or more substances. The risk factors for developing drug abuse problems include peer pressure, curiosity, and conflict in personal relations. **Objective:** 1. To assess awareness of young adults of Kashmir towards drug abuse. 2. To assess the perspectives of the participants regarding factors responsible for drug abuse. **Method:** An online cross-sectional study was conducted among 300 young adults of Kashmir, North India in month of September 2022.Details regarding the socio-demographic characteristics and awareness about the drug abuse were collected using semi-structured questionnaire. **Results:** Almost all of the participants (96.6%) had heard about drug abuse and about (63.3%) reported mass media as the main source of information. Half of participants knew that sedatives, painkillers, opiod derivates (like charas, heroine and cocaine) cause addiction. **Conclusion:** The present study showed that young adults of Kashmir had good level awareness regarding substance abuse, which helped in analyzing youth awareness of substance abuse and associated harm from their use. .

Keywords: Awareness, Drug Abuse , Young adults

Introduction:

Drug abuse has become a global phenomenon affecting almost every country though the extent and characteristics vary depending on the country in question. The most common substance abused are alcohol, marijuana (ganja), bhang, hashish (charas), various kinds of cough syrups, sedative tablets, brown sugar, heroin, cocaine, tobacco (cigarette, gutka, pan masala) etc. Drug abuse has been defined as a disease in 1956 by the World Health Organization and the American Psychiatric Association. Drug abuse defined as "the excessive, maladaptive, or addictive use of drugs for nonmedical purposes despite social, psychological, and physical problems that may arise from such use."[1] Studies have found a strong correlation between adolescent abuse and becoming a problem drug user in adulthood. Adverse childhood events included abuse (physical, emotional or sexual),neglect (physical or emotional), growing up with household substance abuse, criminality of household members, mental illness among household members, parental discord and illicit drug use. These are the environmental factors that might contribute to drug abuse. However, various biological factors are also suggested to be responsible, including genetic predisposition toward addictive behaviour as well as mental illness like those with ADHD, depression or anxiety.[2]

The abuse of alcohol and prescription drugs continues to be a major health problem

internationally. In 2020, an estimated 284million people worldwide aged 15–64 years, majority of whom were men, had used a drug within the last 12 months. This corresponds to approximately 1 in every 18 people in that age group, or 5.6 per cent, and represents a 26 per cent increase on 2010, when the estimated number of people who used drugs was 226 million and prevalence was 5 per cent.[3]

United Nations Office on Drugs and Crime UNODC estimates that worldwide costs related to treating drug abuse total $200-$250 billion or 0.3-0.4 per cent of global G. DP.[4] In India 28.6% of the population use tobacco and 8 lakh people in India die every year due to tobacco-related diseases.[5] UNODC, UNAIDS, WHO and the World Bank jointly estimate that some 11.2 million persons worldwide injected drugs in 2020.[3,4] There has been no measurable change in the estimated global prevalence of injecting drug use from the previous estimate for 2019, which was also 0.22 per cent of the population aged 15–64.[4]

Kashmir has been through the two decades of turmoil that resulted in an increase of psychiatric illness and psychosocial disturbances. A number of psychiatric problems have emerged like depression, OCD, PTSD, Drug Addiction, etc. According to a survey conducted by United Nations Drug Control Progarmme (UNDCP) there are seventy thousand drug addicts in Kashmir division alone. In Kashmir valley 65% to 70% students are drug addicts.[6] As per government psychiatric disease hospital statistics, 90% abusers belong to the age group of 17 to 35 years with a lifetime prevalence of drug addiction.[6] Kashmir, known for its attraction for tourists and migrant laborers which increases rate of different drug use among drug addicts. Easily availability from parent gateway drugs like Cigarette, Naas, Hookah etc are commonly used by young people aging 12-15 years. The current study is conducted as the research regarding awareness on drug abuse is grossly lacking among Kashmiri young adults.

Objectives:

1. To assess awareness of young adults of Kashmir towards drug abuse.

2. To assess the perspectives of the participants regarding factors responsible for drug abuse.

Method:

A cross-sectional study was carried out in Kashmir, part of northern India. An online semi structured questionnaire was developed using Google forms with a consent form attached to it. The link of the questionnaire was sent through emails, WhatsApp and other social media platforms to the participants. The online self-reported questionnaire contained the sections related to awareness towards drug abuse and questions for factors responsible for drug abuse. A total of 300 responses were recorded using convenience sampling technique. Ethical approval was sought before conducting the study. The confidentiality and anonymity of the participant's information were also ensured

Statistical analysis:

The data was analysed in SPSS version 23using descriptive statistics of frequencies and percentages in tables.

Results:

Table 1 shows demographic characteristics of the respondents, that half of the respondents were between the age ranges of 21-25 years and predominantly males(60%). About 53% belonged to rural areas. Nearly half of the participants (48.3%) were graduates. Around 52.3% were unemployed.

Table 2 depicts that almost all of the participants (96.6%) had heard about drug abuse and about (63.3%) reported mass media as the main source of information. Half of participants knew that sedatives, painkillers, opiod derivates (like charas, heroine and cocaine) cause addiction. Almost all (94%) of the respondents knew that drugs cause complications

Table 1: Socio-Demographic Profile of Study Participants (N=300)

Variables	N(%)
Age (Years) N=300)	
16-20	77(25.7%)
21-25	159(53.0%)
26-30	24 (8.0%)
31-35	40(13.3%)
Gender	
Male	180 (60.0%)
Female	120 (40.0%)
Residence	
Urban	132(44.0%)
Rural	168(56.0%)
Educational status	
Illiterate	30(10.0%)
Primary school	0
Middle school	0
High School	125(41.7%)
Graduate and above	145(48.3%)
Occupation	
Unemployed	157(52.3%)
Government employee	63(21.0%)
Private employee	18(6.0%)
Self employed	62(20.7%)
Monthly Family income (INR)	
5000-10000	97 (32.3%)
11000-20000	30 (10.0%)
21000-30000	45 (15.0%)
31000 and above	128 (42.7%)

Table 2: Awareness of study participants about drug abuse (N=300)

Variables	N (%)
Ever heard about drug abuse	
Yes	290(96.6%)
No	10(3.3%)
If yes, source of information (n=290)	
Mass media	189(65%)
Family	35(12%)
Friends	17(6%)
Relatives	19(7%)
Teachers	30(10%)
Drugs which can cause addiction (n=290)	
Sedatives	188(62.6%)
Charas (Cannabis)	260(86.6%)
Codeine	203(67.6%)
Cocaine	200 (66.6%)
Sedatives	188 (62.6%)
Heroin	155 (51.6%)
Painkillers	150(50%)
Morphine	92(30.6%)
Naswar	82(27.3%)
Complications caused by addictive drugs (n=290)	
Dependence to drugs	282 (94%)
Anxiety and depression	263(87.6%)
Aggressiveness	250(83.2%)
Sleep disorder	243(81.9%)
Seeing and hearing images	240 (79.9%)
Forgetfulness	234 (77.9%)
Various forms of drugs available in market	
Oral	194(66%)
Injectable	96 (34%)

Table 3: Participants' Perspectives on Factors Responsible for Illegal Drug Abuse

Variables	N (%)
Peer pressure	215 (71.8%)
Unemployment	175(58.4%)
Curiosity	167(55.7%)
Easy availability	145(48.3%)
Lack of awareness	145(48.3%)
Family dispute	139(46.3%)

like dependence to drugs followed by anxiety and depression (87.6%) and aggressiveness (83.2%). About (66%) were aware that oral forms of drugs are available in market. Table 3 shows factors responsible for illegal drug abuse among study participants. Majority of participants revealed peer pressure as important reason for illegal drug abuse.

Participants suggested various ways for prevention of drug abuse. About 83.6% of them considered counseling and awareness programmes as effective ways for prevention of drug abuse.

Discussion

The current study illuminated awareness towards drug abuse among young adults of Kashmir. Around 190 (96.6%) had awareness regarding drug abuse and there was a significant difference (p value <0.005) between the male and female respondents on the level of awareness regarding drug abuse, especially the males reported higher level of awareness compared to females. Similar result was also found in the study conducted on drug abuse among secondary institution in Bayelsa state[8] Respondents in the study reported mass media as main source of information which was similar with the study that revealed mass media as most frequent source of information[9-12] The study highlighted that the respondents in the age group 20-25 years reported to have a good awareness about drug abuse and various forms of drugs available although no significant difference was found between them. In spite of having adequate awareness regarding drug abuse and its complications, still the respondents especially, the females in age group 20-25 years reported to have abused locally purchased prescription drugs more than once in their life time and a significant difference was found (p value <0.005). The possible reason for this might be due to the fact that prescribed drugs are easily available and affordable in the market this was in line with study that showed substance abuse among young adults depends upon its availability in their neighborhood [11,12]

Level of awareness of drugs that cause addiction among respondents include charas(86 %), cocaine (66%), sedatives(62%), heroine (52%), painkillers (50%). About two third had awareness that oral form of drug is readily available in market. Almost all respondents considered dependency to be the most common complication of drug abuse followed by anxiety and depression, sleep disorder and aggressiveness. Among the psychotropic substance, respondents believed that charas usually caused drug addiction which was in line with the study on the predisposing factors associated with drug abuse who reported that the rate of charas abuse amongst youths has increased radically.[13] In a similar way, a study on the factors influencing substance abuse among undergraduate students also revealed that charas is cheap and can easily be purchased from drug peddlers.[14,15] The respondents of this study gave their various reasons why these substances are consumed and majority pointed out that peer pressure, unemployment, curiosity, family dispute, lack of awareness and easy availability of drugs to be the common reasons for drug abuse. This study helped us to identify the various reasons why these substances are abused by young adults and this was in favor with the study done in students in tertiary institutions which showed the reasons that led to the high consumption of these substances includes peer pressure, curiosity, relieve from anxiety etc.[15] It was also revealed that peer pressure may serve as a powerful tool to much deviant behavior because pressure from friends can impair good sense, wisdom and prove hazardous to students into dangerous activities and this was in line with the study done by Bhat et al[16] The awareness among respondents regarding drug abuse prevention showed that majority believed supportive counseling session, awareness programmes to be the main methods of drug abuse prevention, about (79%)considered rehabilitation and supportive treatment as ways to prevent abuse among young adults.[17]Liddle et al compared multidimensional

family therapy with individual cognitive behavioral therapy and found it to be more effective in reducing the severity of drug addiction[18] as well as awareness programmes in schools like reconnecting youth at school based prevention programmes for high school students with poor school progress and a potential for not completing their education aims at increasing school performance, reducing the drug abuse and improving the learning skills to manage mood and emotions.

Conclusion:

The present study showed that young adults of Kashmir had good awareness of substance abuse. According to participants, factors that can be responsible for increasing drug usage were peer pressure, unemployment, curiosity, family dispute, lack of knowledge awareness and easy availability of drugs. As per the respondents prospects drug abuse prevention could be possible with supportive counseling session, rehabilitation, awareness programmes at family, community and school level.

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Cracking the Mpox code: Insights, Learning, and Policy Pathways for India

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Monkey pox, a viral infection that affects the skin and mucosa, had been a concern globally, leading to various research and response efforts across the globe. A glimpse of employed strategies can enhance our preparedness for zoonotic outbreaks as an addon to the ongoing efforts being done in India.

The United States Centers for Disease Control and Prevention (CDC) responded to the monkeypox outbreak with a comprehensive strategy. They identified high-risk populations, particularly bisexual, gay, and men who have sex with men communities, as being more susceptible to infection. CDC collaborated with community organisations to administer vaccines and raise awareness about prevention measures, especially among disproportionately affected groups. Clinicians were provided with updated recommendations for diagnosis, treatment, and care, and efforts were made to ensure equitable vaccine distribution.

In Europe, the WHO launched a campaign to eliminate monkeypox, focusing on raising awareness and encouraging sustained action by affected populations, health authorities, event organisers, and healthcare providers. Underserved communities were given a platform to share their experiences and needs, and the crucial role of organisations representing gay, bisexual, and other men who have sex with men in combating monkeypox was highlighted. The campaign is supported by a policy brief that outlines actions needed to control and eliminate the virus in the WHO European Region.

The use of tecovirimat under the MEURI framework, along with the potential cross-immunity provided by previous smallpox vaccines, offer potential strategies for treatment and prevention. The CDC's response in the United States, with a focus on high-risk populations, improved surveillance, and equitable vaccine distribution, demonstrates the importance of targeted interventions.

Call to Action for Policy Makers:

India can learn valuable lessons from the global efforts and experiences in addressing monkeypox outbreak.

1. **Enhance public health infrastructure:** Adequate investment in public health infrastructure is crucial for effectively responding to monkeypox outbreaks. Policymakers should allocate resources to enhance healthcare facilities, including the availability of isolation units, personal protective equipment, and trained healthcare personnel.

2. **Emergency use protocols:** India can consider developing and implementing emergency use protocols similar to the MEURI framework.[1] This would allow for the use of unproven clinical interventions, like tecovirimat, during outbreaks when there is limited clinical evidence. Such protocols can ensure timely access to potential treatments and contribute to understanding their effectiveness.

3. **Data collection and monitoring:** India can establish a robust data collection and monitoring system, similar to the WHO Global Clinical Data Platform,[2,3] to gather anonymized patient data and improve understanding of the clinical characteristics, variation, and associations of monkeypox. This can aid in evidence-based decision-making and enhance the quality of collected data.

4. **Invest in One Health approaches:** Monkeypox is a zoonotic disease, highlighting the importance of One Health approaches that integrate human, animal, and environmental health. Policy makers should invest in interdisciplinary collaborations and surveillance systems that monitor the interface between humans, animals, and the environment to detect and respond to potential outbreaks at their source.[4]

5. **Integrated national operational plans:** Drawing from the WHO's policy brief, India can develop integrated national operational plans that outline actions needed to control and eliminate monkeypox in the country. These plans should encompass surveillance, prevention strategies, outbreak response protocols, and coordination among various stakeholders, including health authorities and event organizers. These are in line with India's Public Health Surveillance Vision 2035.[5]

By incorporating these learnings, India can enhance its preparedness, response, and control measures in tackling future monkeypox outbreaks effectively, ultimately protecting the health and well-being of its population.

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INSTRUCTIONS FOR AUTHORS

"Healthline" is a quarterly published national journal of Indian Association of Preventive and Social Medicine. "Healthline" aims to promote quality research in the field of Community Medicine and Public health. The editorial board of the journal is committed to an unbiased, independent, anonymous and confidential review of submitted articles. Manuscripts submitted to this Journal, should not have been published or under consideration for publication in any substantial form in any other publication, professional or lay. All the manuscripts once submitted to and published in the Healthline will become the property of the journal.

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The "Healthline" journal aims at promotion of high quality medical research by

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- Providing a platform to researches in Community Medicine and Public Health
- Improving the visibility of public health issues for concerned stake holders

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Citation: Several research studies have revealed gap between facts and beliefs of adolescent girls and showed that there is low level of awareness about menstruation among girls when they first experience it.[4]

Journals: Mehta MN, Mehta NJ. Serum lipids and ABO Blood group in cord blood of neonates. Indian J Pediatr.1984; 51:39-43.

Book: Smith GDL. Chronic ear disease. Edinburgh: Churchill Livingstone; 1980.

Chapter in the Book: Malhotra KC. Medicogenetics. problems of Indian tribes. In: Verma IC, editor. Medical genetics in India.vol. 2. Pondicherry: Auroma Entrprises; 1978. p. 51-55.

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