Editorial

TYPE I INTERFERON: ANTIVIRAL IS NEED OF THE TIME FOR COVID-19

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Since December 2019 the first reported cases in Wuhan China, the global mortality and morbidity of Coronavirus Disease 2019 (COVID-19) has continued to increase.[1] Recently, different types of vaccines are available in clinical use including mRNA, recombinant viral vector-based, inactivated viral, and protein subunit vaccines. These vaccines are developed in urgency that addresses the prevention of COVID-19.[2] Mutation in the severe acute respiratory coronavirus (SARS-CoV-2), poses a high risk to available vaccines with the emergence of multiple variants. The emergence of an extensively mutated Omicron variant is recognized as a highly mutated variant by the World Health Organization (WHO).[3] To date, no approved antiviral agents are available to treat COVID-19 infected patients, the current treatment is only nonspecific and supportive to relieve the patient's symptoms.[4] Effective antiviral agents are needed to treat COVID-19 patients.

More than 2000 clinical and preclinical trials have been conducted on antiviral drugs to identify potential agents for attenuation of COVID-19 virulence. Remdesivir is used as an evidence-based therapy that has shown benefits in the hospital prolong stay and corticosteroid dexamethasone to suppress hyper inflammation in patients with COVID-19.[5,6] Infection caused by a virus, especially novel strains, where patients have little or no proven acquired response to the virus, the affected individual is dependent on the innate arm of the immune system to immolate the disease severity. Interferons (IFN), the main orchestrators of the antiviral immune system with both potent antiviral and immunomodulatory functions, play a critical role in this innate response.[7]

Interferon is, a cytokine family member, induced by viral infection linked up as a primary driver of immune responses in the inhibitory process of viral replication using various effector proteins. Among three types of interferons, type I (IFN- α/β) have an important role in viral protection.[5,8] Type I IFN is most studied against viral infection which is most potent towards SARS-CoV inhibition. Type I IFN was first discovered in response to influenza viral infection about 60 years ago that significantly suppresses replication of the virus. These cytokines provide multiple activities used in patients with cancer, multiple sclerosis, and chronic viral infections.[5]

Like vaccines, there is global interest in existing antivirals being repurposed against COVID-19. In this regard, the role of IFN in COVID-19 needs to be studied to implement rational therapeutic strategies.

IFNs are the principal drugs used in the treatment of hepatitis B, human immunodeficiency, and hepatitis C virus. Due to their wide spectrum potency of cellular targets, they have flue-like side effects. IFN activates the antiviral state in all cells with transcription of the antiviral genes through signal transducers and activators of transcription, Janus kinase-1 and tyrosine kinase-2.[9] Type I IFN are recognized as a promising therapeutic agent based on previous in vivo and in-vitro studies against MERS and SARS-CoV. IFN-β1b shows

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better clinical outcomes in MERS-CoV infected animals by reducing viral load and improving lung pathology. IFN-α improves the oxygen saturation and quickly resolves the radiographic lung injury in patients with SARS-CoV. Similarly in patients with MERS-CoV combination of ribavirin and IFN-α was linked with the improved outcome at 14 days after diagnosis.[8] Lesson learned from previous research on MERS-CoV and SARS-CoV will be important for establishing the efficacy and specificity of type I IFN against COVID-19.

Recently the COVIFERON randomized control trial demonstrated more favorable outcomes in patients treated with IFN. The study noted low mortality in the group that received IFN as compared to the control group.[10] Another double-blind phase-II clinical trial has determined the safety and efficiency of inhaled nebulized interferon beta-1a (SNG001) in the COVID-19 treatment. The outcome of the study showed beneficial effects of SNG001 in asthma and COPD patients seems to be a great improvement for hospitalized COVID-19 patients. Patients taking IFN SNG001 require no more supplemented oxygen.[7] These positive effects seem to be a better choice for patients with severe COVID-19 with possible benefits and an excellent profile. There is a strong logic for advanced trials to also assess the efficacy and safety of IFN in critically ill COVID-19 patients on ventilator support. These findings were limited to a small-scale population which needs further confirmation in large multicenter studies.

Additionally, intranasal administration of type I IFN as a prophylactic agent could have beneficial consequences in high-risk COVID-19 patients. This intranasal prophylactic use could be effective since respiratory viruses infect humans via the nasopharynx.[11] On the other hand, IFN is a potent virus protease inhibitor. IFN also can reduce pulmonary fibrosis caused by a virus that might attenuate acute respiratory distress syndrome (ARDS) in SARS-infected patients.[12] It is noteworthy that SARS-CoV-2 suppresses signaling of IFN-I at the initial stages of infection. Although it was established that early administration of IFN-β demonstrated more promising outcomes in patients with COVID-19.[12]

In severe COVID there is a life-threatening inflammatory pulmonary infection called acute respiratory distress syndrome. There was a drug-drug interaction between corticosteroids and interferon-β that results in increased mortality in patients with ARDS. However, no significant differences were noted in mortality when interferon was administered without corticosteroids. Because both agents participate in different immunological pathways, these findings point to an antagonistic interaction. Interactions between corticosteroids and interferon may result in significant immunosuppression or negate the putative benefits of each drug in ARDS that leads to death.[13] Overlooking these facts is necessary on the interferon-drug interaction, particularly in immunocompromised patients.

Mutation in the SARS-CoV taking vaccine effectiveness at risk, the contraindications of the vaccines are the other concern. Long-term specific protection of the current COVID-19 vaccines is also debated since it was established that anti-SARS-CoV-2 antibodies do not last more than a year. Antibody-dependent enhancement (ADE) is another concern associated with the safety of vaccines.[14] IFNs have opened up unique opportunities for treating the SARS-CoV-2 infection.

We need safe antiviral agents ahead of vaccines to protect the existing patients with COVID-19. In this regard, IFNs are strongly suggested for clinical trials as an antiviral agent for COVID-19. Collaborative global research efforts are needed to establish the safety and effective profile of IFNs in multicentered clinical trials. We are forwarding this information to WHO, CDC, and the scientific community to clarify the use of IFN as a prophylactic\therapeutic agent.

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Original Article

FREQUENCY OF ENDOMETRIAL HYPERPLASIA IN OBESE PATIENTS OF REPRODUCTIVE AGE PRESENTING WITH ABNORMAL UTERINE BLEEDING

Sana Moeen[1], Shazia Sehgal[2], Farhat Naz[3]

ABSTRACT

Background: Among women of reproductive age, one of the most common gynecological problems is abnormal uterine bleeding (AUB). The prevalence rate of this disorder is up to 30%. The causes of AUB include systemic, physician induced, hormonal related to age and endometrial pathologies like polyps, submucous myomas, hyperplasia, and endometrial carcinoma. It is always important to suspect and evaluate for endometrial pathologies. This study aimed to determine the frequency of endometrial hyperplasia in obese women of reproductive age presenting with abnormal uterine bleeding.

Material and Methods: This cross-sectional study was conducted at Obstetrics and Gynecology Department, Jinnah Hospital Lahore from December 25th 2018 to June 25th 2019. In this study, 215 obese women with abnormal uterine BMI ≥ 27 Kg/m^2 were included. Transvaginal ultrasound was performed to see the endometrial thickness and endometrial tissues were obtained by Dilatation and Curettage (D&C) method for histological findings of endometrial hyperplasia.

Results: The range of age in subjects of this study was from 18 to 35 years with a mean age of 30.33±2.66 years, mean parity 1.74±1.57, mean weight 82.99±8.09 Kg, mean height 1.61±0.10 meters, mean BMI 32.10±3.13 Kg/m^2 and mean endometrial thickness was 10.153±2.39 millimeter. Endometrial Hyperplasia was seen in 9.3% of patients.

Conclusion: The frequency of endometrial hyperplasia in obese women presenting with abnormal uterine bleeding was 9.3%. A high body mass index is the leading risk factor for endometrial hyperplasia in premenopausal women.

Key Words: Endometrial hyperplasia, Obesity, Uterine bleeding

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INTRODUCTION

The prevalence of some type of AUB in patients of the reproductive age group is up to 30%.[1] Medical expenditure in a retrospective analysis data of 1.4 million women having abnormal uterine bleeding was compared with those without abnormal uterine bleeding of more than 50 million women. It was found that women with abnormal bleeding were younger, Caucasian, obese and had poor mental and physical health.[2] The causes of AUB include systemic, induced, hormonal related to age and endometrial pathologies, including polyps, submucous myomas, endometrial hyperplasia and endometrial carcinoma. It is always compulsory to suspect and evaluate for endometrial pathologies. Infectious endometritis can cause irregular bleeding even endometrial atrophy and sometimes manifest as abnormal uterine bleeding.[3] Nowadays, diagnosis of endometrial pathologies can be made by clinical examination, through Transvaginal

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ultrasound (TVS) and saline infusion sonohysterography (SIS), hysteroscopy and sampling of the endometrium.[4] American College of Obstetricians and Gynecologists (ACOG) recommended endometrial biopsies for even young women not responding to treatment or those with increased menstrual bleeding because of unimpeded estrogen treatment. In these young women, the risk factors that have been identified include nulliparity, hypertension, obesity and family history of abnormal uterine bleeding.[5] ACOG has recently classified abnormal bleeding into various types like irregular menstrual bleeding, bleeding due to instruments and postmenopausal bleeding. ACOG has recommended that assessing irregular uterine bleeding histologically in premenopausal women should be dependent upon the symptoms and clinical features of the patient.[6] Nelson et al., in their study have concluded that obese patients of reproductive age presenting with abnormal uterine bleeding have frequency of endometrial hyperplasia of 7.3%.[7, 8] Sajitha et al. in their study, has found it to be 25% in patients with BMI greater than 30.[9]

As recommended by the United Kingdom, National Institute for Health and Care Excellence (NICE), endometrial biopsy should be taken in women with persistent intermenstrual bleeding or if their age is ≥45 years and their medical treatment has failed.[3] Royal College of Obstetricians and Gynecologists (RCOG) also recommends the same guidelines as NICE. The only exception is the age of sampling which is 40 years in case of treatment failure.[10] With the increase in endometrial cancers the gynecologists are recommended to use their clinical judgement to evaluate the risks and then prescribing biopsy accordingly.

World Health Organization (WHO), also consider anyone to be overweight if the body mass index (BMI) is equal to or greater than 25 kg/m^2 and obesity is if the Body Mass Index equals to or is greater than 30 kg/m^2. In women who are obese, the excess of estrogen and androgens may cause anovulation leading to endometrial hyperplasia.

The most common presenting complaint of endometrial hyperplasia is abnormal uterine bleeding. The abnormal uterine bleeding can present as menorrhagia, intermenstrual bleeding, postmenopausal bleeding or irregular bleeding as endometrial hyperplasia can affect premenopausal and postmenopausal women. It accounts for approximately 15% of women who present with postmenopausal bleeding. It is usually believed that most of the endometrial cancers follow a specific sequence of histologically hyperplastic lesions, which range from endometrial hyperplasia without atypia to endometrial hyperplasia with atypia to well-differentiated endometrial carcinoma.[6]

Endometrial hyperplasia can be divided into two types simple and complex, depending upon the complexity and crowding of the glandular structures. It is a challenge for the pathologist to distinguish between reversible changes dependent on hormone and neoplastic changes.

Usually, most varieties of endometrial hyperplasia do not progress to endometrial carcinoma; therefore, treatment should be individualized. Whether simple or complex, endometrial hyperplasia, in the absence of histologically distinguished atypia, is at very low risk to progress to endometrial carcinoma. Therefore, these can be treated conservatively. Most women with endometrial hyperplasia without atypia are treated with progesterone therapy. This treatment may result in complete resolution of this condition.

There is a shortage of data on this subject in our local population. Therefore, it is necessary to get further evidence by determining the frequency of endometrial hyperplasia in our setup in patients of reproductive age who are obese and have abnormal uterine bleeding and planning the course of action accordingly.

This study aimed to determine the frequency of endometrial hyperplasia in obese patients of reproductive age with abnormal uterine bleeding.

MATERIAL AND METHODS

This Descriptive cross-sectional Study was conducted from 25th December 2018 to 25th June 2019 within the Department of Obstetrics and Gynecology of Jinnah Hospital Lahore.

Following operational definitions were set;

Abnormal uterine bleeding was defined as if any one of the subsequent conditions present:

- Too frequent periods (more often than every 26 days).
- Any bleeding lasts longer than 7 days.

Women with BMI > 27 Kg/m^2 were considered obese. (the formula calculated BMI: weight (in kilogram) divided by height in meters square (Kg/m^2)).

Endometrial hyperplasia had been defined as when within 2 days after cessation of menstruation, the endometrium is quite 7 mm in thickness on ultrasound with any one of subsequent histopathology

- Endometrial polyp with irregular interspersed cystic and tubular glands in a very fibrous and focally edematous stroma (H.E., 40x).
- Non-atypical hyperplasia with closely packed endometrial glands and no cytologic atypia (H.E., 100x)
- High power view of endometrial intraepithelial neoplasia with increased glandular density and cytological atypia (H.E., 200x).
- Considerable architectural complexity and cytological atypia in endometrial intraepithelial neoplasia (H.E., 200x).

Sample size was calculated using the expected proportion of (endometrial hyperplasia) 7.3%.[7] Keeping margin of error at 5% and confidence level at 95% sample size was calculated using non-probability consecutive sampling. After rounding off, 215 participants were included in the study.

Women of age 18-35 years of any parity having BMI $\geq$ 27 kg/m^2 and presenting with abnormal uterine bleeding were part of this study. Pregnant females and those taking oral contraceptive pills were excluded from the study.

The approval from ethical committee of Allama Iqbal Medical College was taken. Data containing 215 women fulfilling the inclusion criteria were included in the study from the outpatient Department of Obstetrics and Gynecology of Jinnah Hospital Lahore. Informed consent was taken from each patient. Information of patients like age, parity, weight on weighing machine, height on height scale and BMI as per operational definition was taken. Transvaginal ultrasound was done to determine the endometrial thickness The endometrial sample was obtained by the Dilatation and Curettage method for histological diagnoses. Endometrial hyperplasia was noted as per operational definition by researcher herself on the proforma.

Data was analyzed by IBM-SPSS 23. Number and percent were determined for categorical variables like endometrial hyperplasia. Mean ± SD was taken for quantitative variables like age, parity, weight, height, BMI and endometrial thickness.

Effect of modifiers like age, parity and body mass index were minimized by stratification. Test of significance applied was Chi-Square, $p \leq 0.05$ was considered statistically significant.

RESULTS

This study concluded age range from 18 to 35 years with mean age of 30.339±2.66 years, mean parity of 1.744±1.57, mean weight 82.995±8.09 Kg, mean height 1.610±0.103 meters, mean BMI 32.108±3.13 Kg/m^2 and mean endometrial thickness was 10.153±2.39 millimeter as shown in Table-1.

Endometrial Hyperplasia was seen in 9.3% of patients as shown in Table-2.

Stratification of Endometrial Hyperplasia concerning age, parity and BMI are indicated in Table-3, 4 and 5, respectively.

Table-1: Mean ± SD of Age, parity, weight, height, BMI and endometrial thickness
n=2015

Demographics		Mean ± SD
1	Age (years)	30.33±2.66
1	Parity	1.74±1.57
1	Weight (Kg)	82.99±8.09
1	Height (m)	1.61±0.103
1	BMI (Kg/m^2)	32.10±3.13
1	Endometrial Thickness (mm)	10.15±2.39

Table-2: Frequency and percentage of patients according to Endometrial Hyperplasia
n=215

Endometrial Hyperplasia	Frequency	Age %
Present	20	9.3%
Not present	195	90.7%
Total	215	100%

Table-3: Stratification of Endometrial Hyperplasia concerning age

Age (years)	Endometrial Hyperplasia		p-value
	Yes	No	
18-27	3 (13.6%)	19 (86.4%)	0.460
28-35	17 (8.8%)	176 (91.2%)	
Total	20 (9.3%)	195 (90.7%)	

Table-4: Stratification of Endometrial Hyperplasia concerning parity

Parity	Endometrial Hyperplasia		p-value
	Yes	No	
0-3	20(10.7%)	167(89.3%)	0.069
>3	0(0%)	28(100%)	
Total	20(9.3%)	195(90.7%)	

Table-5: Stratification of Endometrial Hyperplasia concerning BMI

BMI (Kg/m^2)	Endometrial Hyperplasia		p-value
	Yes	No	
27-30	3(5.8%)	49(94.2%)	0.314
>30	17(10.4%)	146(89.6%)	
Total	20(9.3%)	195(90.7%)	

DISCUSSION

The obesity accounts for 200-400% increase in the risk of causing endometrial carcinoma with each point increase in BMI. In this study most of the patients had BMI >30 kg/m^2. No women was using estrogen in this study. Risk of malignancy and hyperplasia is significantly lower in premenopausal than in postmenopausal women.[11] It is not confirmed in this study that obesity impacts premenopausal women or postmenopausal women. Another study conducted at United states, described that a longer duration of overweight and obesity was associated with an increased risk of developing several forms of cancer. Furthermore, the degree of overweight experienced during adulthood seemed to play an important role in the risk of developing cancer, especially for endometrial cancer.[12] This study showed increased risk and higher ratio of endometrial hyperplasia (9.3%) as compared to other studies (4-17.3%).[13-15]

A study conducted by Nelson et al. showed that the frequency of endometrial hyperplasia was 7.3% in patients of reproductive age who were obese and had abnormal uterine bleeding.[7] Sajitha et al., showed in this study that the frequency of endometrial hyperplasia was 25% in the patients of reproductive age having abnormal uterine bleeding and who were also obese.[8]

A significant impact of age on endometrial pathology incidence has been shown in an extensive study based on the pathology reports. Similarly, in our study, women of higher age group also had higher risk of endometrial pathology and impacts of weight and diabetes on the probability of significant pathology.[16]

A short course of hormonal therapy will not be beneficial in women with abnormal bleeding due to obesity or thyroid disorder.[17] Though, if long-term hormonal treatment of progesterone is given, it will prevent endometrial hyperplasia and stop the excessive bleed until the existing etiology becomes cured.[18] OCPs containing progesterone and LNG-IUS efficiently treat endometrial hyperplasia through a progesterone-mediated reversal of the PTEN suppressor genes.[19,20] In this study, relatively lower rates of significant pathology were present in the comparatively younger women.[12,21]

It is essential to keep a regular follow-up to timely diagnose recurrent irregular AUB or development of endometrial hyperplasia.[18,22,23] In women having Hb ≤5 mg/dl, due to heavy vaginal bleed, more than 25% received multiple blood transfusions, yet none of these patients had been on other varieties of medicinal therapy to overcome excessive blood loss during menses.[24]

In this study, many cases were considered and an increased prevalence rate of the disease was obtained but the results are not precise. Even then, they show an estimated upper limit of remarkable pathology found in the endometrial sampling. It is an offer by us to the other investigators who are interested in this area to use our data.[25] We, however, recognize that our data will not apply to the postmenopausal patients having abnormal vaginal bleeding and using hormone therapy. This is because none of our patients were using this hormone therapy.

CONCLUSION

Body mass index (BMI) is the consistent and main risk factor for complex endometrial hyperplasia in premenopausal women. During the assessment of endometrium in symptomatic premenopausal, women's body mass index should always be considered.

AUTHOR'S CONTRIBUTION

SM: Data collection
SS: Drafting of manuscript
FN: Data analysis

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Original Article

FREQUENCY OF METABOLIC SYNDROME AND ITS RELATION WITH SLEEP DEPRIVATION IN MEDICAL OFFICERS OF TERTIARY CARE HOSPITAL

Ferheen Shahbaz[1], Naveed Haider[2], Zunaira Naz[3], Seema Mazhar[4], Muhammad Iqbal Javaid[5]

ABSTRACT

Background: This study aimed to evaluate the frequency of sleep deprivation and its association with metabolic syndrome in medical officers of a tertiary care hospital.

Material and Methods: It was a descriptive cross-sectional study of 100 cases. Non-probability purposive sampling technique was used. The study span was 6 months. Doctors of age 20 to 40 years of age were selected. Firstly, a history of sleep deprivation was taken concerning WHO-recommended criteria. After that their results for metabolic syndrome were compared. ATP III criteria for metabolic syndrome were followed.

Results: Out of 100 doctors, 79 were found to be sleep-deprived and 21 were not sleep deprived with a mean deviation of 65.10. In this sample, 39 persons were having MetS and 61 were normal. When we did the cross-tabulation of sleep-deprived persons with metabolic syndrome the cumulative percentage was as follows. Persons who were not sleep-deprived and have no Mets were 18(85.7%). Persons having no sleep deprivation but met S were 3(14.3%). Persons having sleep deprivation but no Mets were found to be 43(54.4%). The persons who were sleep-deprived and also metabolic syndrome was 36(45.6)%. Pearson Chi-Square= 6.82[a] and p-value = 0.009 statistically significant.

Conclusion: People who are sleep deprived have more chances to develop metabolic syndrome than people having normal sleep patterns.

Key Words: Sleep deprivation, metabolic syndrome, cardiovascular diseases.

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INTRODUCTION

Sleep is a physiological mechanism that regulates various body mechanisms including some endocrine functions. In the developing era, sleep deprivation is affecting our society.

Sleep deprivation can cause our body to suffer from metabolic disorders including obesity, hypertension, insulin resistance, and dyslipidemia leading to Metabolic syndrome (MetS). Metabolic syndrome is a complex disturbance in metabolism leading to diabetes mellitus type 2 (DMT2) or cardiovascular risks. It is defined in various ways by National Cholesterol Education Program – Third Adult Treatment Panel (NCEP ATP III), World Health Organization (WHO), International Diabetes Federation (IDF), and the European Group for the Study of Insulin Resistance (EGIR).[1,2]

NCEP ATP III is a commonly used metabolic syndrome criterion, metabolic syndrome consists of at least three of the following: elevated waist circumference,

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high triglyceride levels, low high-density cholesterol levels, hypertension, and high fasting glucose.[1,2]

Sleep deprivation is divided into Acute sleep deprivation and chronic sleep deprivation. Acute sleep deprivation occurs when a person suffers from a lack of sleep for one or two nights consecutively. On the other hand chronic sleep deprivation occur when one could not continuously manage to sleep five hours per night for up to one year or more. Sleep duration mostly affects body lipid profile irrespective of gender. Sleep durations less than 5 hours affects body insulin resistance leading to DMT2.[3]

In addition sleep deprivation is related to a raised level of evening cortisol, impaired glucose tolerance, decreased secretion of leptin hormone, and increased sympathetic nervous system activity.[4] According to a recent survey the sleep duration is decreasing in the past few decades. In 1990 average sleep duration was nine hours per day which has been decreased to 6 hours in 2000. The recommended sleep duration is 7 hours for adults and 10 hours for children.[5]

Excessive use of mobile phones or other electronic devices changes the physiological excretion of melatonin, which regulates sleep-wake cycles. There is a huge population of students and medical staff who are suffering from sleep deprivation because of their routine duties or night shifts.[6]

Different studies have been conducted to show the relation between sleep deprivation and obesity, increased BMI, or raised levels of serum triglycerides[7]

J Osiane Broussard et al observed that one night of poor sleep could equal six months of a high-fat diet. According to the obesity society annual meeting at obesity week SM 2015 in Los Angeles, Insufficient sleep affects insulin sensitivity in the same way as a high-fat diet.[8]

Sleepless nights cause increased secretion of ghrelin and decreased secretion of leptin hormone leading to increased appetite and obesity. A cardiovascular epidemiology study conducted by Bidulescu on 1515 African Americans also noticed that the effect of short sleep duration with dyslipidemia raised Triglycerides levels and the effect of long sleep duration with the low level of HDL-C.[9]

Health care residents and other professionals like police officers with deprived sleep have altered cognitive ability, behavior, and social vigilance.[10]

A study by Mustahsan et al showed overall, sleep deprivation was more common among females than males. The physical and mental health was also impaired because of weight changes, insomnia, decreased libido, obstructive sleep apnoea, blood pressure problems and post-menstrual dysmorphic disorders.[11]

This study aimed to establish an association of sleep deprivation with MetS in medical officers. The study will help health care workers devise strategies to improve sleeping habits leading to decreased metabolic disorders or metabolic syndrome.

MATERIAL AND METHODS

It was a descriptive cross-sectional study of 100 cases. A nonprobability purposive sampling technique was used. The study span was 6 months. Doctors of age 20 to 40 years of age were selected. Firstly history of sleep deprivation was taken concerning WHO-recommended criteria. After that their results for metabolic syndrome were compared. ATP III criteria for metabolic syndrome, was followed. Sample was taken to the chemical pathology section of the AIMC Pathology department.

Samples were labeled properly and processed in the lab on BECKMAN COULTER AU480 at Chemical Pathology Section AIMC Lahore.

Data were analyzed by SPSS 20.0. Quantitative data i-e age will be summarized as mean and standard deviation. The categorical value will be expressed in the form of frequency and percentages. Bar charts and pie charts will be used to display the data. Appropriate statistical tools will be applied to analyze the data.

RESULTS

Out of 100 doctors,79 were found to be sleep-deprived and 21 were not sleep deprived. with a mean deviation of 65.10. In this sample 39 persons were having Mets and 61 were normal. when we did the cross-tabulation of sleep-deprived persons with metabolic syndrome the cumulative percentages were as follows. Out of 21 participants 18 (85.7%) were having neither sleep deprivation nor metS while 3 (14.3%) were having metS but did not have sleep deprivation. Out of 79 participants 43 (54.4%) had sleep deprivation but did not have metS and 36 (45.6%) were having both sleep deprivation and metS. Pearson Chi-Square= 6.82[a] and p-value = 0.009 statistically significant.

Table-1. Comparison of variables means with or without Metabolic syndrome

Parameter	Metabolic Syndrome			
	NO (61)		YES (39)	
	Mean	SD	Mean	SD
Sleep Deprived h/w	79.42	21.07	61.47	39.25
Waist. cm	80.19	9.35	86.82	5.53
Weight. kg	60.93	11.42	70.89	9.56
Height. feet	5.25	0.29	5.33	0.36
BMI	23.50	3.29	27.27	3.45
Triglyceride	129.63	36.23	166.00	32.99
Cholesterol	169.95	37.71	231.79	31.48
BP systolic	117.69	11.56	127.84	12.25
BP diastolic	76.79	9.41	85.21	6.45
BSR	96.00	22.97	118.58	23.26

This table summarizes the whole data. having all parameters mean and SD about met S and sleep deprivation

Table-2. Frequency Distribution of Sleep Deprivation and Metabolic syndrome

Parameter	Response	Frequency
Sleep Deprivation	**No**	21 (21%)
	Yes	79 (79%)
Metabolic Syndrome	**No**	61 (61%)
	Yes	39(39%)

Table-3. Cross Tabulation Metabolic Syndrome and Sleep Deprivation

		Metabolic Syndrome		Total
		No	**Yes**	
Sleep Deprivation	**No**	18 (85.7%)	3 (14.3%)	21 (100.0%)
	Yes	43 (54.4%)	36 (45.6%)	79 (100.0%)
Total		61 (61.0%)	39 (39.0%)	100 (100.0%)

The table shows a high percentage of the group having both sleep deprivation with metabolic syndrome that is 36. 70.5%

DISCUSSION

There are many studies, showing the relation between metabolic syndrome and sleep deprivation however, all have not the same results. Some studies show that there is a relationship between sleep deprivation with short sleeping hours but some studies are showing that long sleep durations affect our body metabolism and induce diabetes mellitus type 2 and cardiovascular diseases but still there is a controversy that long sleep durations lead to metabolic syndromes or not.[2,5,11]

There is a contrast between genders as well. a cohort study conducted on 7696 Chinese males shows that there is a relationship between long and short sleep deprivation in men but this association is not found in females some articles and recent researches prove that increase in the level of fasting blood glucose, total cholesterol, systolic and diastolic blood pressure is correlated with people sleeping less than 6 hours per day.[12]

A Korean study performed in July 2008 show a U shape curve between metabolic syndrome and sleep deprivation. shows that metabolic syndrome risk increases with sleep deprivation. there is more prevalence of hypertension and abdominal obesity in people having less sleep than 5 hours per day and those who sleep more than nine hours per day have more value of triglycerides and LDL cholesterol.[13]

A meta-analysis in 2014, revealed that sleep deprivation and metabolic syndrome and strongly correlated in males and females both but there is no relationship found between the

long sleep duration and metabolic syndrome but controversy is still there. Research shows that evening cortisol is raised with sleepiness nights. increases the secretion of the sympathetic nervous system and also the leptin hormones. but the actual mechanism is still not known.[14]

CVD is the primary clinical outcome of metabolic syndrome. According to ATP III, high blood sugar level or diabetes mellitus is the high-risk factor for CVD. In past studies, we have seen that sleep cycles and changed lifestyle changes are contributing to developing metabolic syndrome. our one-third of the population is having metabolic syndrome.[15] Being a health care professional doctors know the symptoms indication and way of developing metabolic syndrome but still, it was found at a higher ratio among them as well.[16] This is because of the reason their alternative duties and hectic work hours and disturbed sleep-wake cycles.

This study conducted in Jinnah hospital Lahore was very exclusive and unique. All the doctors got equal chances to be in the study. The samples were taken on a random basis. It was simply a descriptive and cross-sectional study in nature. For sleep calculations, various scales and sleep parameters were under consideration. Epworth sleepiness scale and taking a history of doctors based on this background supported accurate result findings. for metabolic syndrome the ATP III and WHO criteria were followed. metabolic syndrome is the group of conditions so it included various parameters. taking history for waist circumferences and weight height helped in calculating BMI body mass indices. The results we got prove the relationship between sleep deprivation and metabolic syndrome. as per previous studies Several researchers have examined the effect of working long on-call hours on performance and cognitive functioning.[3,8-10,17] even though working extended shifts may also result in impaired mood and decreased alertness, which can impair cognitive functioning and physician performance with a negative impact on patients' and doctors' safety, very few researchers have studied these effects.[11,18] To fill this research gap, this study examined the effect of acute sleep deprivation due to working extended on-call hours on both mood and alertness in junior physicians in a teaching hospital.

This is the cluster of various metabolic risk factors. ATP III mostly uses this insulin-resistant syndrome term. this indicates that insulin-resistant is primary and other factors develop in response to insulin resistance. although the ATP III also indicated that the CVD is the first clinical symptom develop in response to Mets or having insulin resistance. the risk of diabetes mellitus type 2 also increases. other diseases like polycystic ovarian syndrome. gallstones of cholesterol fatty liver and asthma.[19]

These components of the metabolic syndrome constitute a particular combination of major and emerging risk factors. CVD and obesity specifically abdominal obesity, sessile lifestyle, smoking, high LDL cholesterol, low HDL cholesterol, having a family history of chronic heart diseases, aging, insulin resistance glucose intolerance, pro-inflammatory state and prothrombotic states are the major risk factors. Every factor of metabolic syndrome should be identified.[20,21]

CONCLUSION

People who are sleep deprived have more chances to develop metabolic syndrome than people having normal sleep patterns.

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AUTHOR'S CONTRIBUTION

FS: Drafting of manuscript
NH: Data analysis
ZN: Review manuscript
SM: Critical review
MIJ: Critical review & final approval

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Original Article

FREQUENCY OF CAUSAL FACTORS OF FACIAL CONTACT DERMATITIS IN DERMATOLOGY OPD OF CHARITY HOSPITAL

Rabia Anjum[1], Mariam Sheikh[2], Rabail Majeed[3]

ABSTRACT

Background: The face is exposed to a great number of cosmetics and facial dermatitis is the prototypical presentation of cosmetic contact dermatitis. This study aimed to determine the frequency and causes of contact dermatitis on the face of patients coming to dermatology OPD.

Material and Methods: Cross-sectional study was conducted in the outpatient department of Dermatology, Akhtar Saeed Trust Hospital, EME, Lahore, over six months i.e, July 2020 to December 2020. Patients between 12-71 years with contact Dermatitis on the face were enrolled in the study. All data were entered in SPSS and analyzed.

Results: There was a total of 182 patients who presented with a contact dermatitis on the face. 145(79.7%) were females, and 37 (20.3%) were males. About 76(41.8%) patients had facial contact dermatitis due to the use of whitening creams, 48 (26.4%) patients had this because of steroid abuse (which are easily available in the market), In 35 (19.2%) patients, the cause was the application of mix creams whereas 23 (12.6%) patients had a history of hair dye usage.

Conclusion: This study concluded a high frequency of patients with contact dermatitis. The most common cause is whitening agents available in the market.

Key Words: Contact dermatitis, Cross-sectional study, Dermatitis

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INTRODUCTION

Contact dermatitis is an inflammatory response caused by contact with a substance allergic or irritant.[1] Contact dermatitis is a rash that crops up on your skin when you touch or have a reaction to a certain substance. It's red, itchy, and uncomfortable, but it's not life-threatening.[2] The rash could be caused by an allergy or because the protective layer of your skin got damaged. Allergic contact dermatitis is accepted to be the most prevalent.[3]

The face is exposed to a great number of cosmetics, and as a result, facial Dermatitis is the prototypical presentation of cosmetic contact dermatitis.[4,5] Allergic contact dermatitis is a hypersensitive reaction that occurs by a complex mechanism with the interaction of immunoregulatory cytokines and subsets of T lymphocytes.[6,7]

Patients with a contact dermatitis on the face usually present redness, burning, and itching sensation on the affected area.[8,9] Over time, the skin becomes pigmented and cracky with more severe symptoms. Causes of contact dermatitis on the face are many, but cosmetics are the reason most commonly in females. Use of whitening agents, steroid abuse, and mix creams top the list.[10,11]

Determining the cause of contact dermatitis in patients coming to dermatology OPD may help find the most common etiological factor of redness and burning on the face.

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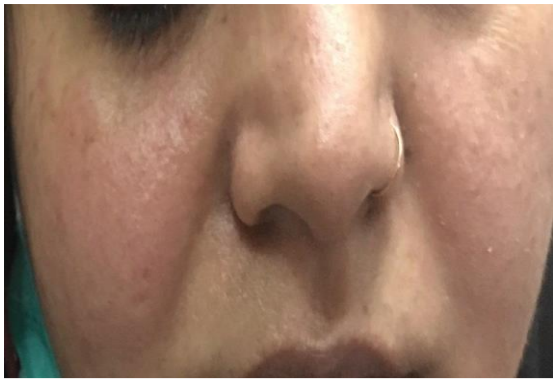

Figure-1: Contact dermatitis on the face of patients due to the use of whitening agents

MATERIAL AND METHODS

This cross-sectional study was carried out in the outpatient department of Dermatology, Akhtar Saeed Trust Hospital, EME, Lahore, over six months i.e 1st July 2020 to 31st Dec 2020. Non-probability consecutive sampling was done. Data entry and analysis were performed on SPSS 16.

After approval from the hospital ethical committee, patients fulfilling the criteria were included in the study. Patients between 12 to 71 years with facial contact dermatitis were enrolled in the study. Patients with a history of connective tissue disorders, photo contact dermatitis, and drug-induced Dermatitis were excluded. Physical examination to determine other causes of contact dermatitis was done. Duration of symptoms was noted. Chi-square test was used post-stratification with p-value ≤ 0.05 considered as significant

RESULTS

One hundred eighty-two patients presented with a contact dermatitis on the face. Among total, 145(79.7%) were females and 37(20.3%) were males. Table-1. Among total participants, 76(41.8%) patients had facial contact dermatitis due to the use of whitening creams, 48(26.4%) patients had this because of steroid abuse (which are easily available on the market). In 35(19.2%) patients the cause was the application of mixed creams, whereas 23(12.6%) patients had a history of hair dye usage. Table-2. About 30(16.5%) patients were of skin type III, 129 (70.9%) patients were of skin type IV, and 23(12.6 %) patients were of skin type V. Table-3

Mean age of paticipants was 30.5±1.11 years (minimum 12 years to maximum 71 years)

Table-1: Descriptive statistics according to gender

	Frequency	Percent
Male	37	20.3
Female	145	79.7
Total	182	100.0

Table-2: Descriptive statistics according to causes of contact dermatitis

Causes	Frequency	Percent
Whitening creams	76	41.8
Steroid abuse	48	26.4
Mix creams	35	19.2
Hair dye usage	23	12.6
Total	182	100.0

Chi square= 34.13, p-value =0.0001

Table-3: Descriptive statistics according to skin type

Skin types	Frequency	Percent
III	30	16.5
IV	129	70.9
V	23	12.6

Chi sq= 2.139, p-value= 0.001

DISCUSSION

In this study, 182 patients presented with contact dermatitis, of which 37 (20.5%) were males and 145 (79.7%) were females. Yasmeen J Bhat conducted a study on 200 patients of steroid-induced rosacea in which 144 were females and 56 were males.[12]

In our study findings, the frequency of patients reported with contact dermatitis due to hair dye usage were 12.6% while another Korean study found that 11.3% cases showed positive reaction to PPD in hair dyes.[13]

In this study, the cause of contact dermatitis was the use of whitening agents in 76(41.8%) patients, topical steroid abuse in 48(26.4%) patients, application of mix creams in 35 (19.2%), and hair dye usage in 23 (12.6%) patients. Waranya Boonchai et all carried out

a study on 1247 cases and found that fragrance chemicals and preservatives were the most commonly recognized contact allergen.[14]

In this study, the skin type frequency was 30 (16.5%) for type III skin, 129 (70.9%) for type IV skin, and 23 (12.6%) for type V skin. Ida Darate found that contact dermatitis in adolescents was more frequent in white girls.[15]

Erin M Warshaw et al, carried out a retrospective study on 50507 patients who underwent patch testing. 1332 male patients had facial Dermatitis. They appear to have unique sources of allergens that must be considered as male grooming practices evolve.[16]

Most frequently female patients with contact dermatitis were presented because of greater exposure to cosmetic agents and the social stigma of having bad facial skin. Prolonged application of topical steroids can lead to rosacea.[17]

To create awareness among the general population to avoid using whitening agents commonly available in the market, topical steroid abuse and mix creams application to prevent contact dermatitis is need of the hour.

CONCLUSION

The study concludes that contact dermatitis is common in female patients, using whitening agents, steroids, and mixed creams. This study might help in the treatment of such patients.

AUTHOR'S CONTRIBUTION

RA: Drafted the manuscript
MS: Analysed the data
RM: Data collection

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Original Article

EFFECTS OF DOMESTIC VIOLENCE ON REPRODUCTIVE HEALTH: AN EVIDENCE FROM PAKISTAN DEMOGRAPHIC HEALTH SURVEY

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ABSTRACT

Background: This study aimed to determine the effects of domestic violence on women's reproductive health based on demographic variables as contributing factors.

Material and Methods: Secondary data from the Pakistan Demographic and Health Survey 2012-2013 were analyzed collected from 3687 ever-married females between the ages 15-49 years, who were selected and interviewed about the experiences of domestic violence. The researchers used the IBM SPSS 20 for data analysis in the present study. Binary logistic regression and multivariate logistic regression were used to determine the odds and adjusted odds ratios.

Results: This study identifies that 38% of women have experienced some form of domestic violence (31% emotional violence, 28% less severe violence, and 7% severe physical violence), 38% of women have used contraceptive methods (28% modern, 9% traditional, or .1% folkloric), 11% women have not agreed at all, to be pregnant out of 398 pregnant women, and 36% women have terminated their pregnancy ever. Place of residence (rural and urban) had the highest odds ratio of emotional violence (adj. OR 1.64, CI at 95%, 1.3-2.0, p<.001). The highest adj. odds of contraceptive use were 2.2 (95% CI, 1.75-2.75, p<.001) for respondents' education compared to non-educated. The adj. odds ratio of unintended pregnancy was 2.3 (95% CI 1.6-3.42, p<.001) times increased on increase in each child in the house and for pregnancy termination was 1.87 (95% CI 1.5-2.3, p<.001) times for the respondents with age more than 30 years as compared to lower age. The adj. odds ratio of "contraceptive use" was 1.28 (95%CI 1.1-1.49, p<.001) times for those respondents who experienced emotional violence as compared to the respondents who had no such experience, whereas 1.27 (95%CI 1.1-1.47, p<.001) times for those who had experienced overall domestic violence. By controlling social equity, the adj. odds ratio of unintended pregnancy was 2.05(95%CI, 1.04-4.05, p<.05) times for respondents who had experienced overall domestic violence compared to respondents who had not experienced it.

Key Words: Domestic Violence, Reproductive Health, Pregnant Women

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INTRODUCTION

Intimate partner violence (IPV) is a growing public health issue with adverse physical, emotional, sexual, and reproductive health-related consequences.[1-4]

IPV is a widespread phenomenon with high prevalence rate ranging from (20%–75%) partners experience emotional abuse, (13%–61%) physical violence and (6%–59%) sexual violence in their lifetime.[5] Social, cultural, and geographical settings have a significant effect on IPV. More than half (62%) women aged above 15 years, experience IPV in countries with diverse social, cultural, and geographical settings.[6] Gender-primarily based violence (GBV) substantially impacts mental, physical, and social wellness of girls in quick period in

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addition to longer-time period.[7] IPV has negative consequences on women's sexual and reproductive health, such as unintended pregnancy, pregnancy termination and abortion.[8]

Reproduction ability is considered compulsory for continuing marital relationships, especially in South Asian countries. Women's ability to produce the desired number of children and their sex determined their status and social identity in the husband's home and society.[9] There was a significant association between unintended pregnancy and pregnancy loss and intimate partner violence in Pakistan.[10] Women who experienced severe emotional, physical, and sexual violence, their husbands were also uncooperative to contraceptive use and planning of pregnancy.[11, 12] Women who revel in IPV additionally revel in better prices of unintentional being pregnant.[13-15] Domestic abuse often limits the ability of women to manage their reproductive health.[16]

Domestic violence is significantly affected by the husband's educational level as the level of education increases the violence reduced on women from their partner and husband cooperate in planning the pregnancy.[17] Women who experience IPV also experience higher rates of unintended pregnancy. In Colombia, 32,000 unintended pregnancies every year are linked with IPV.[18] According to WHO, (2002) the rate of induced (unsafe) abortion was estimated to be doubled among those women who have undergone IPV compared to those who did not, reflecting a high rate of unintended pregnancy.[19] The chance of undesirable pregnancy may also occur, without delay though pressured sexual sex or issue in negotiating condom or contraceptive use in an abusive relationship, or in a roundabout way thru high-chance sexual behaviors linked to a history of sexual abuse in childhood or adolescence.[20]

Violence against women restricts their social, political, and economic activities.[21] Their capacities and autonomy remain under-developed and limit their freedom.[22] This study analyzes the relationship between domestic violence and reproductive health among ever-married women in Pakistan. This study may guide health professionals, social workers, and policymakers to pay attention to this issue. To find out the most contributing demographic variable on domestic violence and reproductive health. To analyze the effects of domestic violence on reproductive by controlling the social equity.

MATERIAL AND METHODS

Third Pakistan Demographic and Health Survey (PDHS) was conducted by the National Institute of Population Studies (NIPS) Islamabad during October 2012 and March 2013, funded by USAID; however, technical and logistical support was provided by ICF International. The Pakistan Bureau of Statistics (PBS) coordinated on design and collection of the sample with NIPS.[23] The people from all over Pakistan were considered as population except FATA, Azad Jammu and Kashmir, military restricted and protected areas.

A two-stage random sampling technique was used, in which first the urban and rural areas were identified according to the 1998 population census. The PBS developed the urban frame in which all the urban cities and towns were divided into small blocks having an average of 200-250 households, called enumeration blocks. 26543 urban enumeration blocks were further categorized based on income level (low, middle, and high) according to economic census 2003. According to the 1998 census, lists of villages/Mouzas/dehs were used as the sample frame for rural areas that could be identifiable by name.[23]

The experts estimated that 14000 households could provide reasonable precision for survey indicators so 248 urban and 252 rural areas were listed from all over Pakistan. In the second stage, 28 (14000/ {248+252} = 28) households were selected by using a systematic sampling technique with a random start. 6,944 urban and 7056 rural households were selected to conduct the survey. The survey was carried out at 498 areas out of

500. Punjgur and Dera Bugti were the areas that were dropped because of the law-and-order situation from Balochistan province and overall, 24 areas (mostly from Balochistan) were replaced. 13,558 ever-married women aged from15-49 were successfully interviewed, out of 14,569 households, 12,943 were interviewed, with a 93% response rate. The detailed methodology has been described in the survey report.[23]

For this study, we took data of 3687 women selected and interviewed for domestic violence in the sample (by using the filter V044=1 on the datasheet) to find out the effects of domestic violence on reproductive health. The researcher utilized the IBM SPSS 20 for data analysis in the present study. Binary logistic regression and multivariate logistic regression were used to determine the odds and adjusted odds ratios for demographic, independent. Dependent variables to check the probability of the occurrence.

The participants' demographics were assessed through questions regarding age, region, area of residence, level of education of respondents, wealth index, number of children in the house, husband/partner's education, and type of relationship with husband. The researchers assessed reproductive health with 3 concepts: (1) contraceptive method used, (2) current pregnancy wanted, and (3) pregnancy termination. In DHS data, these concepts were assessed through different responses such as contraceptive method uses ("No method", "Folkloric method", "Traditional method", "Modern method"), current pregnancy wanted ("Then she is pregnant", "Later I want pregnancy", "Not at all") and pregnancy termination ("No", "Yes"). In inferential statistics, the researchers use "binary logistic regression" and "multinomial logistic regression". For this purpose, response categories of the dependent variable "Reproductive Health" should be binary. Response categories were changed into binary for further analysis. For "contraceptive method used", if respondents use any method will be considered as "yes" and "No Method" as "no", and in "current pregnancy wanted", ("then", or "later" as yes) and ("not at all" as "no") where "pregnancy termination" is already in binary. Domestic violence was accounted with Emotional violence (D103 A-C) ("Ever been humiliated by husband/partner", "Ever been threatened with harm by husband/partner", "Ever been insulted or made to feel bad by husband/partner"), Less severe physical violence (D105 A-C, J) "Ever been pushed, shook or had something thrown by husband/partner", "Ever been slapped by husband/partner", "Ever been punched with a fist or hit through something dangerous through husband/partner", "Ever had arm twisted or hair pulled through husband/partner"), Severe bodily violence (Done zero five D-F; "Ever been kicked or dragged through husband/partner", "Ever been strangled or burnt by husband/partner", "Ever been threatened with knife/gun or another weapon by husband/partner") with response categories (0 "Never", 1 "Often", 2 "Sometimes", 3 "Yes, but not in the last 12 months", 4 "Yes, but the frequency in last 12 months missing). Experienced any emotional violence (D104), Experienced less severe violence (D 106), Experienced any severe violence (D107), Overall domestic violence (D104 + D106 + D107) having the response categories (0 "No", 1 "yes").

The demographic health surveys procedures included in the study were approved by ICF and the ethics review board of Pakistan. Ethical approval is not required because this secondary data is available publicly. All authors had access to this data for research.

RESULTS

Table-1 shows the demographic information of the female respondents, who have been selected and questioned in a demographic health survey (DHS 2013) about domestic violence and the variables of reproductive health (contraceptive use, current pregnancy wanted, and pregnancy termination). According to the demographic variables, most respondents (30%) belong to Punjab,

53% from the rural area. A majority (56%) of the respondents and 31% of the respondent's husbands are not educated. 74% of respondents are married to their first cousin (from father 43% and mother 31%) and only 12 percent have other relations than a cousin. According to results, 38% of respondents experience overall domestic violence where 31% experience emotional, 28% less severe physical, and 7% severe physical violence. 38% of respondents use contraceptives where 28% use modern and 9% use a traditional contraceptive method. From currently pregnant female respondents, 73% agree on pregnancy, 16% agree later, and 11 do not agree with current pregnancy. In response to the statement "Ever had a terminated pregnancy," 36% of respondents said "yes."

Table-1: Distribution of descriptive variables

Demographic variable	**Groups**	**Frequency (%)**
Age	15-19	116(3)
	20-24	478(13)
	25-29	691(19)
	30-34	693(19)
	35-39	699(19)
	40-44	524(14)
	45-49	486(13)
Region	Punjab	1092(30)
	Sindh	841(23)
	Khyber Pakhtunkhwa	684(18)
	Balochistan	480(13)
	Gilgit Baltistan	333(9)
	Islamabad (ICT)	257(7)
Type of place of residence	Urban	1734(47)
	Rural	1953(53)
Highest educational level	No education	2051(56)
	Primary	530(14)
	Secondary	654(18)
	Higher	452(12)
Wealth index	Poorest	683(18)
	Poorer	715(19)
	Middle	684(19)
	Richer	768(21)
	Richest	837(23)
No. of total child living in house	no child	374(10)
	1-2 children	996(27)
	3-5 child	1135(31)
	more than 5	1182(32)
Husband/partner's education level	No education	1149(31)
	Primary	498(13)
	Secondary	1165(32)
	Higher	867(23)
Type of relation	1st cousin on father's side	971(43)
	1st cousin on mother's side	697(31)
	Second cousin	298(13)
	Other relationship	277(12)
A woman has said in choosing a husband	No	705(18)
	Yes	2979(81)
Types of domestic violence		
Experienced any emotional violence	No	2531 (69)
	Yes	1154 (31)
Experienced less severe violence	No	2653 (72)
	Yes	1033 (28)
Experienced any severe violence	No	3429 (93)
	Yes	257 (7)
Overall domestic violence	No	2283 (62)
	Yes	1402 (38)
Reproductive health		
Current use by method type	No method	2296 (62)
	Folkloric method	4 (.1)
	Traditional method	347 (9)
	Modern method	1040 (28)
Current Pregnancy wanted	Then	291 (73)
	Later	65 (16)
	Not at all	42 (11)
Ever had a terminated pregnancy	No	2362 (64)
	Yes	1325 (36)

Table-2: Frequency distribution of a variable (domestic violence)

Domestic violence	Never (%)	Often (%)	Sometimes (%)	Yes, but not in the last 12 months (%)	Yes, but the frequency in the last 12 (%)
Experienced any emotional violence (D103 A-C)					
"Ever been humiliated by husband/partner"	2762(74.9)	303(8.2)	495(13.4)	120(3.3)	6(.2)
"Ever been threatened with harm by husband/partner"	3518(95.5)	64(1.7)	63(1.7)	36(1.0)	1(.0)
"Ever been insulted or made to feel bad by husband/partner"	2711(73.6)	341(9.3)	529(14.4)	100(2.7)	4(.1)
Experienced less severe violence (D 105 A-C, J)					
"Ever been pushed, shook, or had something thrown by	3075(83.4)	116(3.1)	296(8)	195(5.3)	2(.1)
"Ever been slapped by husband/partner"	2712(73.6)	158(4.3)	473(12.8)	330(9)	6(.2)
"Ever been punched with a fist or hit by something harmful by	3386(91.8)	66(1.8)	121(3.3)	108(2.9)	1(.0)
"Ever had arm-twisted or hair pulled by husband/partner"	3269(88.7)	83(2.2)	168(4.6)	165(4.5)	1(.0)
Experienced any severe violence (D105 D-F)					
"Ever been kicked or dragged by husband/partner"	3474(94.2)	40(1.1)	82(2.2)	85(2.3)	1(0)
"Ever been strangled or burnt by husband/partner"	3609(97.9)	18(.5)	29(.8)	25(.7)	-
"Ever been threatened with knife/gun or another weapon by husband/partner."	3620(98.2)	11(.3)	35(.9)	19(.5)	-

Table-3: Binary and Multivariate logistic regression

Domestic violence	Emotional violence Adj. OR (95% C.I)	Less severe physical violence Adj. OR (95% C.I)	Severe physical violence Adj. OR (95% C.I)	Overall domestic violence Adj. OR (95% C.I)
Age <>30	.92(.73-1.16)	.8(.63-1.02)	.9(.59-1.37)	.87(.7-1.09)
Place of residence R/U	1.64(1.3-2.0)***	1.26(1.01-	1.2(.8-1.79)	1.48(1.2-1.82)***
Educated or not	.87(.7-1.1)	.75(.59-.95)*	.7(.45-1.09)	.84(.68-1.05)
Rich or poor	.93(.74-1.16)	.98(.78-1.24)	1.14(.76-1.7)	.95(.76-1.17)
No of children	1.08(1.03-1.3)***	1.1(1.06-1.16)***	1.06(.98-1.15)	1.1(1.06-1.16)***
Husband educated or not	.82(.67-1.02)	.75(.61-.93)**	.68(.47-.98)*	.79(.64-.97)*
First cousin or other	1.54(1.26-1.9)***	1.45(1.18-1.8)***	1.44(1.01-2.06)*	1.49(1.2-1.8)***
Husband choosing	1.25(.98-1.6)	.98(.77-1.25)	.99(.65-1.5)	1.06(.84-1.3)

Table-4: Binary and Multivariate logistic regression

Reproductive health	Contraceptive used (yes/no)	Unintended Pregnancy	Pregnancy terminated
Age <>30	1.3(1.03-1.65)*	.98(.25-3.86)	1.87(1.50-2.33)***
Place of residence R/U	.85(.7-1.05)	3.48(.97-12.4)	1.06(.87-1.3)
Educated or not	2.2(1.75-2.75)***	1.18(.31-4.5)	.97(.78-1.2)
Rich or poor	1.51(1.2-1.9)**	.71(.18-2.8)	1.07(.86-1.33)
No. of children	1.25(1.19-1.3)***	2.3(1.6-3.42)***	1.07(1.03-1.26)**
Husband educated or not	1.4(1.14-1.79)**	1.7(.55-5.5)	.88(.72-1.08)
First cousin or other	1.09(.89-1.35)	3.44(1.1-10.5)*	1.12(.9-1.37)
Husband choosing	1.3(1.02-1.67)*	2.7(.73-10.4)	1.14(.91-1.4)

Multivariate logistic regression between the types of domestic violence (emotional, less severe physical, severe physical violence, and overall domestic violence) and demographic variables are used to find out the most contributing variable. The table indicates that place of residence (rural and urban) has the highest odds ratio of emotional violence (adj. OR 1.64, CI at 95%, 1.3-2.0, p<.001) followed by the type of relation with husband (adj. OR 1.54, CI at 95%, 1.26-1.9, p<.001) and increase in each no. of children (adj. OR 1.08, CI at 95%, 1.03-1.3, p<.001). These results interpret that the respondents experience more emotional violence in the rural areas, when married with someone other than the first cousin and with an increase in each no. of a child in the house.

The highest adj. odds ratio of less severe physical violence is 1.45 (95%CI 1.18-1.8, p<.001) for those respondents who married other than the first cousin followed by the area of residence (adj. OR 1.26, 95%CI 1.01-1.57, p<.05), with an increase in each no. of a child in the house (adj. OR 1.1, 95%CI 1.06-1.16, p<.001), respondent's education (adj. OR .75, 95%CI, .59-.95, p<.05) and its husband's education (adj. OR .75, 95%CI, .61-.93, p<.01). These results indicate 45% less violence experienced by the respondents who married their first cousins and near about 26% more violence experienced by the respondents who belonged to the rural area compared to the urban. If the respondent or her husband is educated, they experience nearly 25% less violence (less severe physical violence) than non-educated. Violence related to the increase in each no. of a child in the house is positive. This result shows that near about 10% violence increases on each child, so if the number of children is 5 or more, this variable will be the most contributing factor.

The highest adj. odds ratio of severe physical violence is 1.44 (95%CI 1.01-2.06, p<.05) for those respondents who married other than the first cousin followed by husband's education .68 (95% CI, .47-.98, p<.05). The highest adj. odds ratio (OR 1.49, CI at 95%, 1.23-1.8, p<.001) of overall domestic violence is with the type of relation with husband, if he is first cousin experience, less overall domestic violence as compared to the other relation, followed by the place of residence rural 1.48(95% CI, 1.2-1.82, p<.001) as compared to urban and with an increase in each no. of children (adj. OR 1.1, 95%CI 1.06-1.16, p<.001). The adj. odds of overall domestic violence are .79, (95%CI, .64-.97, p<.05) for female respondents who have an educated husband compared to non-educated husbands.

The highest adj. odds of contraceptive use is 2.2 (95% CI, 1.75-2.75, p<.001) for respondent's education as compared to non-educated followed by wealth index (adj. OR 1.51, 95% CI, 1.2-1.9, p<.001), her husband's education (adj. OR 1.4, 95% CI, 1.14-1.79, p<.01), age (adj. OR 1.3, 95% CI, 1.03-1.65, p<.05) on the increase in each child in the house, which is near about 25% more use of contraceptive.

The adj. odds ratio of unintended pregnancy is 2.3 (95% CI 1.6-3.42, p<.001) times increase on the increase in each child in the house followed by relation with husband (adj. odds 3.44, 95%CI 1.1-10.5, p<.05). The highest adj. odds of pregnancy termination is 1.87 (95% CI 1.5-2.3, p<.001) times for the respondents with age more than 30 years as compared to lower age followed by no. of increase in each child (adj. odds 1.07, 95%CI 1.03-1.26, p<.01) in house.

Table-5 indicates the adjusted odds ratio of variables with/without controlling social equity characteristics (region, education, and wealth index). The adjusted odds ratio of "contraceptive use" is 1.28 (95%CI, p<.001) times for those respondents who went through emotional violence as compared to the respondents who do not experience it, were 1.27 (95%CI 1.1-1.47, p<.001) times for overall domestic violence. These results by controlling social equity describe that female respondents, exposed to emotional violence, are more likely to use contraceptive methods. Without controlling social equity, there is no significant relationship with contraceptive use.

Table-5: logistic regression with and without controlling social equity

Logistic regression between reproductive health and domestic violence without controlling and controlling social equity (education, area of residence, and wealth index)

Logistic regression between reproductive health and domestic violence		**Contraceptive use (Yes/no)**	**Unintended Pregnancy**	**Pregnancy terminated**
Emotional violence	No	Ref	Ref	Ref
	Yes	1.12(.97-1.29)	2.15(1.13-4.1)*	1.35(1.17-1.56)***
Less severe violence	No	Ref	Ref	Ref
	Yes	.93(.8-1.08)	1.7(.89-3.3)	1.45(1.25-1.68)***
Severe violence	No	Ref	Ref	Ref
	Yes	.91(.7-1.2)	1.28(.43-3.86)	1.5(1.17-1.95)**
Overall violence	No	Ref	Ref	Ref
	Yes	1.1(.96-1.26)	2.2(1.17-4.27)*	1.42(1.2-1.63)***
Logistic regression between reproductive health and domestic violence by controlling social equity		**Contraceptive use (Yes/no)**	**Unintended Pregnancy**	**Pregnancy terminated**
Emotional violence	No	Ref	Ref	Ref
	Yes	1.28(1.1-1.49)***	1.9(1.0-3.8)	1.35(1.2-1.56)***
Less severe violence	No	Ref	Ref	Ref
	Yes	1.09(.9-1.27)	1.5(.8-3.14)	1.45(1.2-1.7)***
Severe violence	No	Ref	Ref	Ref
	Yes	1.04(.79-1.37)	1.07(.3-3.32)	1.5(1.16-1.9)**
Overall violence	No	Ref	Ref	Ref
	Yes	1.27(1.1-1.47)***	2.05(1.04-4.05)*	1.42(1.2-1.63)***

The adjusted odds ratio of unintended pregnancy is 2.15 (95%CI 1.13-4.1, p<.05) times for respondents who experience emotional and 2.2(95% CI, 1.17-4.27, p<.05) times for overall domestic violence as compared to those who did not experience any form of violence without controlling social equity. When the researcher controlled social equity, the adj. odds ratio of unintended pregnancy was 2.05(95%CI, 1.04-4.05, p<.05) times respondents who experienced overall domestic violence compared to respondents who did not experience it. These results interpret that females do not want to be pregnant as they experience domestic violence.

The odds of pregnancy termination are 1.35 (95% CI, 1.17-1.56, p<.001), 1.45 (95% CI, 1.25-1.68, p<.001), 1.5 (95% CI, 1.17-1.95, p<.001) and 1.42 (95% CI, 1.2-1.6, p<.001) times the odds of the respondents who experience emotional, less severe physical, severe physical and overall domestic violence respectively as compared to those who do not experience any type of domestic violence. Results interpret that the severity of violence is more likely to terminate the pregnancy. Results identify no change in odds ratios of pregnancy termination without and with controlling social equity.

DISCUSSION

This study is based on PDHS 2013, which identifies that 38% of women have ever experienced any form of domestic violence, in which 31% emotional violence, 28% less severe violence, and 7% severe physical violence during 2008-2012. Women experience domestic violence all around the world with different prevalence rates, such as about 20% in South Africa and about 50% in Thailand.[24, 25]

This study also reveals that 63% of respondents had more than two children and most of the women married with their first cousin (from mother or father). Results indicate that 38% of women use contraceptive methods (28% modern, 9% traditional, or .1% folkloric), 11% of women do not agree to get pregnant out of 398 pregnant women and 36% of women ever terminate their pregnancy. Residence Place and relation with husband, are recognized as the maximum contributing demographic

variables to home-based violence. Respondents from rural areas experience more domestic violence as compared to urban areas. Those respondents who have married their first cousin (from father or mother) experience less domestic violence than other types of relationships.[26]

The risk of domestic violence reduces with an increase in each no. of children and higher the levels of education of respondents and their husbands (same results are identified in India and another area.[27,28] In reproductive health, respondent's education is positively associated with contraceptive use as the education of the respondent increases the use of contraceptives also increases.[29] The desire to be pregnant again reduces as the no. of children increases and chances of pregnancy termination increases with age.[30]

This study identifies that the termination of pregnancy increases as the violence increases and they do not want to be pregnant, different studies also identify the same results higher rates of unintended pregnancy with IPV.[31] By controlling social equity, researchers reveal that respondents who experience IPV, their chances to use contraceptives increases to avoid pregnancy, same findings regarding the use of contraceptives by the pregnant women when they experience IPV.[32]

CONCLUSION

Place of residence, relationship with the husband, no. of children, and educational level are significant demographic variables for domestic violence and women's reproductive health. Women married with other than first cousins (from mother or father) experience more domestic violence. The respondents from rural areas and having non-educated husbands experience more violence than other groups. Domestic violence increases with an increasing number of children in the house. In reproductive health, respondent's education is the most contributing demographic variable for the use of contraceptive methods, no. of children for unintended pregnancy, and age for pregnancy termination. Domestic violence has a significant effect on women's reproductive health. The termination of pregnancy increases as the violence increases. Those women who experience this are less likely to want to be pregnant again and more likely to use contraceptive methods to avoid pregnancy when the social equity is controlled.

AUTHOR'S CONTRIBUTION

AR: Intro, data analysis, methodology, and results
MI: Intro, methodology, corrections, and abstract
BM: Literature review and referencing
RE: Discussion & title
AI: Title, discussion, and literature review

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Original Article

METABOLIC SYNDROMES IN FEMALES WITH POLYCYSTIC OVARY SYNDROME

Naila Mumtaz[1], Adila Ashraf[2], Shazia Abid[3], Saira Niaz[4], Syeda Abida Ahmed[5], Sadaf Jabbar[6]

ABSTRACT

Background: One of the most frequent female endocrine disorders is polycystic ovary syndrome. It has a strong association with metabolic syndrome. The objective of this study was to find the frequency of metabolic syndrome in females with polycystic ovary syndrome.

Material and Methods: This was a cross-sectional study done in the department of obstetrics and gynecology, Hameed Lateef Hospital Lahore for six months. All the data was taken in form of age, address, and phone number. All diagnosed cases of PCOS were further evaluated for metabolic syndrome. A blood sample was taken with an aseptic measure and was sent to the hospital laboratory for biochemistry analysis. Systolic and diastolic blood pressure was measured by researcher herself and waist circumference was measured with a standard measuring tape.

Results: The mean age of all females was 34.58 ± 6.54 years with minimum and maximum ages as 18 and 45 years. There were 80(25.3%) obese and 236(74.7%) non-obese females. The mean systolic and diastolic blood pressure was 130.05 ± 12.15 and 85.59 ± 9.40. The overall prevalence of metabolic syndrome in females with PCOS was 31.6% (n=100).

Conclusion: It is concluded that the frequency of metabolic syndrome was high in females with polycystic ovary syndrome. Hence females with PCOS must be ruled out for metabolic syndrome and they must be considered for first-line treatment to reduce cardiovascular disease and other complications related to metabolic syndrome.

Key Words: Infertility, Obesity, Metabolic syndrome, Cardiovascular disease

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INTRODUCTION

In women of reproductive age, the most prevalent endocrine problem is polycystic ovarian syndrome (PCOS).[1-3] Chronic hyperandrogenic anovulation, changes in ovarian morphology, and dysfunctional uterine hemorrhage are all symptoms of PCOS.[4] PCOS predisposes women to infertility, endometrial cancer, obesity, dyslipidemia, type 2 diabetes mellitus, cardiovascular disease (CVD), and hypertension.[5-7] Insulin resistance (IR) and hyperinsulinemia are regarded to be important etiological contributors in PCOS.[8,9] PCOS is associated with insulin resistance (IR) in around 60%–80% of women with PCOS and 95% of obese women with PCOS.[4] Almost 12 to 21% of females are affected by PCOS. Metabolic characteristics of women with PCOS are clustered.[10] Clinically, the relationship between IR and PCOS has significant implications, especially since IR is regarded

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to be the underlying pathogenic mechanism in the relationships between glucose intolerance, hypertension, obesity, coronary artery disease, and lipid abnormalities which together comprise the metabolic syndrome (MetS).[8,9] MetS is more common in PCOS individuals who have numerous metabolic disorders. The prevalence of MetS varies between groups, owing to differences in the classification of PCOS or MetS, sampling methodology, control group selection, and age, weight, and race of the participant IR is a key factor in MetS pathogenesis. However, it is well acknowledged that IR plays a significant role in the genesis of PCOS.[11]

A study reported that 28.8% of the women with PCOS had metabolic syndrome[11] while another study reported that 53.3% cases had metabolic syndrome.[12] Moreover, a local study reported that frequency of Metabolic syndrome was diagnosed in 35.6% of cases of PCOS.[13]

Various studies reported controversial results about the metabolic syndrome prevalence in females with PCOS.[11,12] These contradictory findings highlighted the necessity for further research into metabolic syndrome features in patients with PCOS. If we find a higher frequency of Metabolic syndrome then in the future more focus can be put on early diagnosis and treating the related conditions. As PCOS is one of the leading factors for female infertility and metabolic syndrome has a few components like obesity that can further enhance the risk of infertility and may be one the cause of treatment failure in infertility.[14] So by taking into account these things we can minimize the risk of PCOS and metabolic syndrome.

MATERIAL AND METHODS

This was a cross-sectional study done in the department of obstetrics and gynecology, Hameed Lateef Hospital Lahore for 6 months after approval of synopsis. Non-probability consecutive sampling technique was used. 316 females with PCOS were taken according to a previous study.[8] The inclusion criteria for our study were females aged 18-45 years, diagnosed female with PCOS while the exclusion criteria were women with non-classical congenital adrenal hyperplasia, Cushing syndrome, thyroid dysfunction, hyperprolactinemia (Prolactin >25 ng/ml), and androgen-producing tumors. All collected data was taken after taking informed consent from the department of obstetrics and gynecology, Hameed Lateef Hospital Lahore. Their basic data was taken in form of age, address, and phone number. All diagnosed cases of PCOS were further evaluated for metabolic syndrome. Blood samples were taken with aseptic measures and were sent to the hospital laboratory for biochemistry analysis. Systolic and diastolic blood pressure was measured by research herself and Waist circumference with a standard measuring tape. Metabolic syndrome was labeled as per operational definition. All data was collected on predesigned Performa. SPSS version 22 was used for entering and analyzing data. Data analysis was performed in form of mean ± standard deviation for quantitative data such as age, weight, height and BMI, Systolic / diastolic blood pressure, fasting plasma glucose, triglycerides, HDL cholesterol, and Waist circumference. Frequency and percentages were used for categorical data such as metabolic syndrome. To address affect modifiers data were stratified for age, obesity, marital status. Post stratified Chi-square test was applied by taking P-value $\leq$ 0.05 as significant.

RESULTS

In this study, a total of 316 female patients with PCOS were included. The mean age of all females was 34.58 ± 6.54 years with minimum and maximum age of 18 and 45 years. (Table 1)There were 151(47.8%) females who were 18-34 years old and 165(52.2%) females were 34-45 years old. (Figure 1)There were 235(74.4%) married and 81(25.6%) females were unmarried. (Figure 1)The mean weight, height, and BMI were 82.96 ± 21.10, 1.75 ± 0.20, and 26.77 ± 3.88 respectively. The mean waist circumference was 67.36 ± 4.39. (Table 1) There were 80(25.3%) obese and 236(74.7%)

non-obese females. (Figure 1)The mean systolic and diastolic blood pressure was 130.05 ± 12.15 and 85.59 ± 9.40. The mean fasting plasma glucose was 94.81 ± 15.10, the mean Triglycerides was 142.92 ± 17.66 and the mean HDL was 57.84 ± 6.63. (Table 1) According to operational definition 100(31.6%), females had metabolic syndrome while 216(68.4%) of the females did not have metabolic syndrome. (Figure 1) When data were stratified for age, marital status, and obesity, it was found that the frequency of metabolic syndrome was statistically the same in both the age groups and marital status, p-value > 0.05 while it was higher in obese females, p-value < 0.05. (Table 2)

Table-1: Demographic and biochemistry profile of patients

Parameter	Mean	S.D	Range	Minimum	Maximum
Age (years)	34.58	6.54	27.00	18.00	45.00
Weight (kg)	82.96	21.10	65.00	58.00	123.00
Height (m)	1.75	0.20	0.80	1.37	2.17
Body mass index	26.77	3.88	16.45	19.17	35.62
Waist circumference	67.36	4.39	15.00	60.00	75.00
Systolic blood pressure	130.05	12.15	50.00	110.00	160.00
Diastolic blood pressure	85.59	9.40	50.00	70.00	120.00
Fasting plasma glucose	94.81	15.10	60.00	80.00	140.00
Triglycerides	142.92	17.66	60.00	120.00	180.00
HDL cholesterol	57.84	6.63	32.00	35.00	67.00

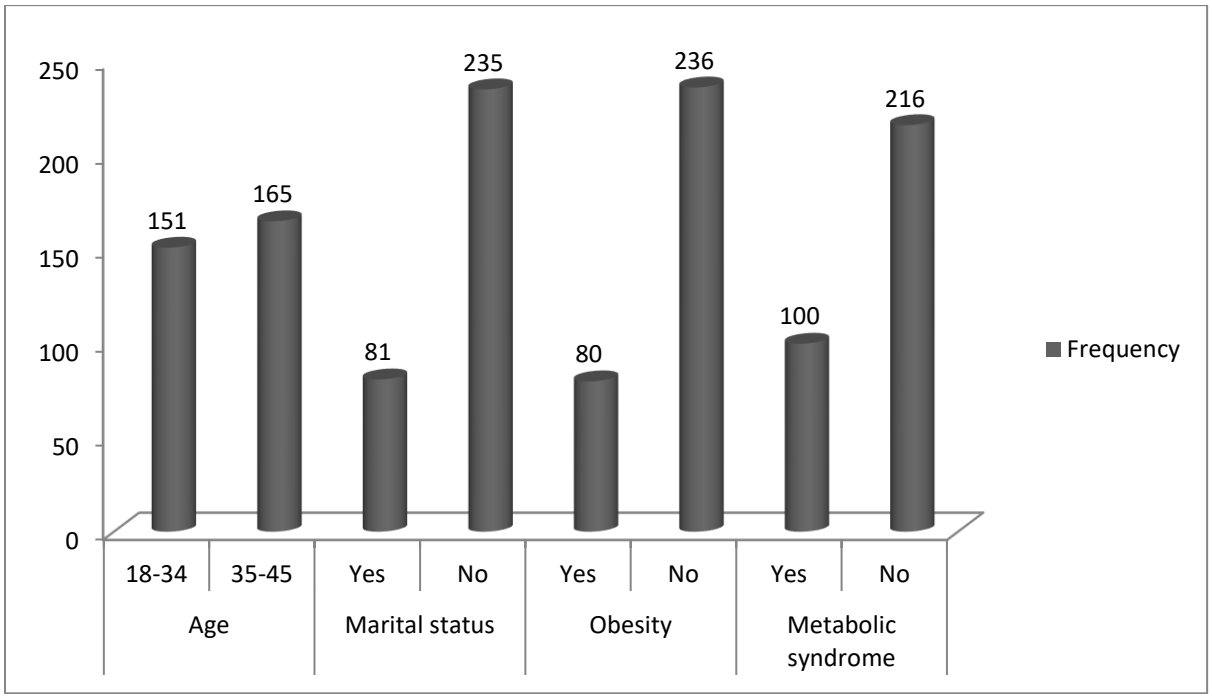

Figure-1: Frequency of patients according to age, obesity, marital status and metabolic syndrome

Table-2: Frequency of metabolic syndrome after stratifying for age, marital status and obesity

Parameter		Metabolic syndrome		p-value
		Yes	No	
Age groups (years)	18-34	43(28.5%)	108(71.5%)	0.247
	35-45	57(34.5%)	108(65.5%)	
Marital status	Married	71(30.2%)	164(69.8%)	0.35
	Un-married	29(35.8%)	52(64.2%)	
Obesity	Yes	38(47.5%)	42(52.2%)	0.001
	No	62(26.3%)	174(73.7%)	

DISCUSSION

The frequency of metabolic syndrome has been investigated in several countries in patients with polycystic ovarian syndrome. According to the previous study, the metabolic syndrome prevalence was 43% in the United States, 24.9% in China and 1.6% in Czech women.[15] These disparate findings highlight the need of assessing metabolic syndrome in various populations to aid in the development of screening techniques to avoid long-term consequences.[16,17] In the current study the mean age, BMI, and waist circumference were 34.58 ± 6.54 years, 26.77 ± 3.88, and 67.36 ± 4.39. There were 80(25.3%) obese and 236(74.7%) non-obese females. A previous study reported comparable mean age, BMI, and waist circumference.[18]

In the current study according to operational definition 100(31.6%), females had metabolic syndrome while 216(68.4%) of the females did not have metabolic syndrome. A previous study reported that MetS prevalence in women with PCOS was 28.8%[11] while another study reported that 53.3% of cases had Metabolic syndrome.[12] The findings of the current study are not matching with these two studies. Moreover, we found almost similar frequency to another local study that reported that frequency of Metabolic syndrome was diagnosed in 35.6% cases of PCOS.[13] Another study also reported high (46.4%) metabolic syndrome prevalence in women with PCOS in Pakistan.[19] Another study done in Tehran reported that the metabolic syndrome prevalence was 19.7%.[18] It was also confirmed in the current study the metabolic syndrome was high in obese females and it increases with age and BMI. Similarly, another study reported 30.5% metabolic syndrome prevalence in cases of PCOS. They reported a strong association between metabolic syndrome prevalence and age, BMI of the patients with PCOS.[20]

A previous study used a multivariate logistic regression analysis to find significant predictors of metabolic syndrome. According to the findings, 37.5 percent of participants had metabolic syndrome. Diabetes mellitus was found in 5.8% of the patients, 8.3 % had abnormal fasting glucose, and 11.7 % had an abnormal glucose test. In 93.3 % of PCOS patients, dyslipidemia was found. The occurrence of metabolic syndrome was substantially related to age and a waist-hip ratio of less than 0.85 among all risk variables. As a result, infertile women with PCOS, especially those over the age of 25 or who have central obesity are at an increased chance of experiencing metabolic syndrome and must be provided diagnostic tests.[21]

PCOS is no longer considered simply as a disease of ovary. Now researchers growing awareness of the multisystem features of this disease.[22] Small sample size was the major limitation of our study. A study based on a large sample size should be conducted to get better results.

CONCLUSION

It is concluded that the frequency of metabolic syndrome was high in females with polycystic ovary syndrome. Hence females with PCOS must be ruled out for

metabolic syndrome and they must be considered for first-line treatment to reduce cardiovascular disease and other complications related to metabolic syndrome.

AUTHOR'S CONTRIBUTION

NM: Article writtings
AA: Data collection
SA: Main idea and data collection
SN: Data analysis
SAA: Data analysis
SJ: Data analysis

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Review article

ANTIOXIDANT EFFECT OF MINT

Sumbal Khalid,[1] Hamid Javaid Qureshi[2]

ABSTRACT
Mint has been used since prehistoric times for various purposes such as in medicines, cosmetics, and food items. Various benefits of mint are due to the presence of different components such as menthol, menthone, and rosemarinic acid. Mint also possesses antioxidant potential due to which it is being widely studied and used for the prevention of various diseases, such as the prevention of hepatotoxicity.

Key Words: Medicines, Cosmetics, Menthol, Menthone

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INTRODUCTION

Mint belongs to the family Lamiaceae.[1] It has 25 different species.[2] The most common varieties in Pakistan are Mentha piperita, Mentha Officinalis, Mentha pulgium, Mentha longifolia, Mentha royleana and Mentha arvensis. Mentha arvensis is widely cultivated all across Pakistan. Mentha arvensis is called pudina in the Tamil language. Mentha arvensis possesses many important ingredients such as menthol, sesquiterpenes menthone, flavonoids, tannins and carotenoids, etc. Among these, flavonoids, phenolic acids and triterpenes possess antioxidant potential. It is cultivated worldwide because of its various benefits. It is used in the food industry. It is used to add flavors in toothpastes[3] and chew gums. Due to its unique smell, it is also used for aromatherapy.[4] It is also an important ingredient in many medicines.[5] Menthol is an important component of mint which is responsible for the characteristic fragrance and taste of the mint. Mint is also used for the preparation of herbal teas. It has medicinal importance too. It is used as antiviral[6], antimicrobial[7,8], anticancer[9,] and anti-inflammatory agent.[10]

It has a carminative effect and is used for the treatment of diarrhea, nausea and inflammatory bowel syndrome.[11]

Because of various benefits, fewer side effects, cost-effectiveness and easy availability, mint species are being researched for their usage in medicine for the prevention of various diseases.

A lot of work both nationally and internationally has been done previously to study the antioxidant role of mentha species. These antioxidants were studied for their hepatoprotective effects also.

DISCUSSION

The antioxidants role of mint has been studied widely. It has been found that mint is hepatoprotective because of its antioxidant potential. A study was conducted in Pakistan by Ahmed et al, on nine different species of mint. Those included Mentha suaveolens, Mentha royleana, Mentha spicata, Mentha arvensis, Mentha Officinalis, Mentha citrata, Mentha piperita, Mentha longifolia and Mentha Pulgium.[12] Antioxidant effects of those nine species were studied. It was found that those plants possessed phenolic compounds. The antioxidants, thus, delay or prevent the oxidation process.[13] Antioxidants also possess the ability to increase the release of superoxide dismutase, which also can

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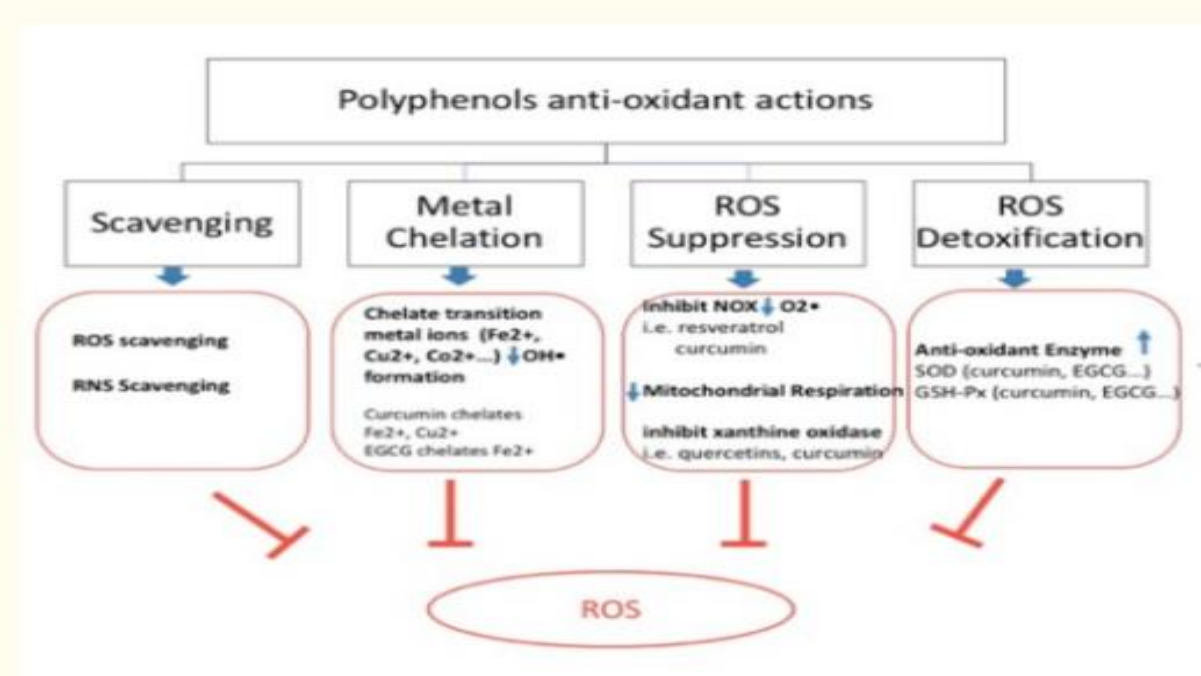

Figure 1. The antioxidant action of polyphenols.[17]

scavenge free radicals.[14] Those antioxidants also could increase the release of superoxide dismutase. Which also could scavenge free radicals.[15]

Another study was conducted by Wani et al, (2018) on the role of mint. They found that Mentha arvensis possessed flavonoids and phenols. These components could scavenge free radicals. These also could convert Fe^{+3} to Fe^{+2}. Hence, in this way, they reduced the oxidized metabolites of the lipid peroxidation process.

Polyphenols are the most potent antioxidants in the mentha species. A total of 60 % of polyphenols are flavonoids while 40% of polyphenols are phenolic acids.[16] Flavonoids include luteolin, menthoside, rutin hesperidin, etc. Phenolic acids include lithospermic acid, phytosterols Daucosterol, etc. Polyphenols can increase the number of antioxidants.[17] They scavenge iron and copper ions.[18,19] They inhabit xanthine oxidase and Nicotinamide adenine dinucleotide phosphate (NADPH) oxidase, enzymes that generate reactive oxygen species. They inhibit lipoxygenase and cyclooxygenase which are enzymes involved in the lipid peroxidation process.[20]

CONCLUSION

Mint possesses antioxidant potential due to the presence of various antioxidants.

AUTHOR'S CONTRIBUTION

SK: Drafted manuscript
HJQ: Supervision and critical review

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Case Report

BARDET BIEDL SYNDROME WITH MEGALOBLASTIC ANEMIA

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ABSTRACT
Bardet Biedl Syndrome (BBS) is a multisystem autosomal recessive rare disorder having variable symptoms ranging from peripheral obesity, retinal degeneration, polydactyly, hypogonadism, and renal impairment among many other features. We present a case of 16 years old female exhibiting characteristic features of Bardet Biedl Syndrome.

Key Words: Bardet Biedl syndrome, Obesity, Polydactyly, Hypogonadism

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INTRODUCTION

Bardet Biedl Syndrome is a ciliopathic autosomal recessive rare disorder with variable expressivity and a wide range of clinical variability within families. It was 1st reported by Bardet and Biedl in 1920.[1] It was once thought that the syndrome, described by Lawrence and Moon in 1866, was the same as described by Georges Bardet and Artur Biedl in the early 1920s, but these syndromes are now recognized as two separate entities.[2,3] The main features are Rod-Cone dystrophy with childhood-onset of visual loss preceded by night blindness, postaxial polydactyly, truncal obesity, specific learning difficulties, male hypogonadism, and complex female genitourinary malformations along with renal dysfunction.[4,5]

In this report, a case of Bardet Biedl Syndrome is being presented that is not very common in clinical practice. It exemplifies the need for multidisciplinary management in such cases.

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CASE DESCRIPTION

Clinical situation and course of events

A 20yrs old girl presented to the emergency department of mayo hospital with a complaint of dyspnea for three months for which she had repeated blood transfusions at some local care. The last transfusion resulted in the development of some rash along with worsening dyspnea. Later she presented to Mayo hospital with the same complaint. For the past 2 weeks, she also developed jaundice along with exertional dyspnea of grade III, relieved with rest, not associated with orthopnea, paroxysmal nocturnal dyspnea, cough, hemoptysis, wheeze, and chest pain. She developed a fever after the last blood transfusion, low grade in intensity, not recorded properly, intermittent, not associated with rigors & chills or vomiting.

No history of cough, sputum, palpitations, sweating, sore throat, diarrhea, dysuria, burning micturition, and night sweats. No history of itching, clay-colored stools abdominal pain, hematemesis, or Malena was there with jaundice. A major source of history was her mother. According to her, the patient is also gaining weight for the last 2 years with normal hair patterns & growth along with hyperpigmentation on fingers, toes, and nape of the neck. She also developed polyuria for the last 2 years with

no polydipsia or polyphagia. No history of heat or cold intolerance was there.

Born out of consanguineous marriage, she was delivered through normal vaginal delivery at full term at a local setup and was given immunization. No history of jaundice, birth asphyxia, difficulty in feeding, and cyanosis. She had delayed mental and physical growth with delayed developmental milestones as told by her mother. She started sitting at the age of 1yr, walking at the age of 4 years and started talking at the age of 6 years. She has had polydactyly and night blindness since birth along with decreased vision (both far and near). In the past 2 years, she developed some problems with daylight vision as well. She is more agitated and rational towards fellows while playing, having abnormal eating habits as well. Menarche was achieved at the age of 14 with normal menstrual history from then onwards. She has 4 siblings; all of them are normal and healthy.

The young girl weighed 88 kg, height 170 cm, BMI of 30.4 kg/m2 with stable vitals. Pallor, jaundice along with hyperpigmented fingers, toes and nape of the neck were present. Buffalo hump, central obesity, depressed nasal bridge, high arched palate and short stubby hands and feet & postaxial polydactyly were present in left hand &foot.

CNS examination revealed the patient's poor memory, low IQ and scanning speech which didn't make sense. The sensory and motor systems were normal. She had gait ataxia with no signs of nystagmus, tremors and positive glabellar tap. Cranial nerve examination revealed visual acuity reduced to the perception of light in both eyes. Fundoscopy illustrated features of retinitis pigmentosa. She had a Mini-mental state examination score of 9 showing severe cognitive impairment. Cardiovascular, respiratory, GIT and genitourinary examination remained unremarkable.

Her Labs revealed a Hb level of 5.7g/dl with an MCV of 103.1fl. Peripheral blood film revealed macrocytosis, poikilocytosis and anisocytosis. Serum Vitamin B12 levels were markedly reduced with normal folate levels. Serum cortisol n ACTH was normal. Her HbA1C turned out to be 6.8%. LFTs revealed raised bilirubin level of 5.8mg/dl with predominant indirect bilirubin and raised alkaline phosphatase and LDH showing ineffective erythropoiesis because of Vitamin B12 deficiency. Serum calcium was normal with raised PTH. Urine examination revealed protein in traces. Echocardiography, USG abdomen and thyroid profile were also normal. X-ray of hands n feet didn't show any bony abnormality.

Clinical resolution

She was given blood transfusion along with Vit B12 replacement and oral hypoglycemics and further symptomatic management & was asked to follow regularly in OPD consultation with pediatrician and endocrinologist was also made.

DISCUSSION

The prevalence of Bardet-Biedl syndrome is 1 out of 160000 persons in North America and Europe. A higher incidence rate has been seen in Newfoundland (one out of 13000).[6] The Incidence of BBS in Pakistan is not known.

Bardet-Biedl syndrome can be due to the mutations in at least 14 different genes termed as the BBS genes. BBS genes mutations result in problems with the structure as well as the function of cilia.[7,8] Mutations in the BBS1 gene cause about one-fourth of all cases of Bardet-Biedl syndrome. Another major contributor to these stats is the BBS10 gene which results in 20 percent of cases.[8] In25% of the patients, the cause of the syndrome is still unknown.

The most prominent and major feature of BBS is complete Retinal dystrophy. The second main feature of BBS is obesity whose frequency ranges from 72-to 96% according to measurement criteria.[4]

The 3rd prominent finding in BBS is abnormalities of Limbs. The Post-axial polydactyly (ulnar side of the hand and on the fibular side of the foot) along with brachydactyly of both feet and hands are the most frequent deformities. Mental idiocy is a

complex and debatable finding of BBS. Results of recent object IQ tests showed that only a minority of patients are mentally retarded.[9]

Hypogenitalism is also reported in BBS. In females, genital abnormalities include hypoplastic fallopian tubes, ovaries, and uterus, absent vaginal and/or urethral orifices, partial and complete vaginal atresia[3] while in males the BBS small penis and testes are found in 88% of the patients.[10]

According to the criteria developed by Dr. Philip Beales, a patient who had four primary features or three primaries along with two secondary features are considered as BBS patients. Primary features include rod-cone dystrophy, polydactyly, obesity, hypogonadism in males, learning disabilities, and renal anomalies. The Secondary features include speech disorder or delay, brachydactyly/syndactyly, strabismus/cataracts/astigmatism, polyuria/polydipsia (nephrogenic diabetes insipidus), developmental delay, mild spasticity (especially lower limbs), diabetes mellitus, ataxia/poor coordination/imbalance, hypertrophy of left ventricle, other congenital heart diseases, dental crowding/high arched palate, and hepatic fibrosis.[4,5]

Our patient had four major criteria along with minor criteria that fulfill the diagnostic criteria of Bardet-Biedl syndrome.

Management consists of a multidisciplinary approach. The prognosis of BBS is adverse, with early onset of blindness, hypertension, diabetes mellitus, and obesity. Renal impairment is common and often remains undetected. Surveillance includes annual blood pressure measurement, regular ophthalmologic evaluation, monitoring of renal function, regular testing for blood sugar levels and lipid profile. Failure to diagnose partial or incomplete cases may be the reason the disease is considered rare. Pediatricians, ophthalmologists, endocrinologists, and nephrologists should be aware of BBS because of its adverse prognosis.

CONCLUSION/LESSONS TO BE LEARNT

It isn't confirmed if the presence of megaloblastic anemia is an association with BBS or only a mere coincidence, but such hematological manifestation may be of real clinical importance. As the disease is often missed in childhood and a diagnosis could be delayed later in life. Management of it consists of a multidisciplinary approach.

AUTHOR'S CONTRIBUTION

HL: Drafted manuscript
NF: Literature search & data collection
RR: Critical review
AI: Conception of idea

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Letter to the Editor

REDUCING THE RISK THRESHOLDS FOR URGENT CANCER INVESTIGATION - A MIGHTY CHALLENGE BUT POTENTIALLY LIFESAVING FOR THOUSANDS: A LETTER TO THE EDITOR

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Cancer is the uncontrolled growth of abnormal cells that can arise anywhere in the body as a result of mutational or chromosomal changes or abnormalities, can produce massive growths, locally invade surrounding tissues and spread to other body parts, making it one of the leading cause of death worldwide. One of the factors that make cancer exceptionally deadly is its late diagnosis when considerable growth or spread has already occurred.[1] Effort to diagnose and begin palliative care of cancer earlier on in its timeline provides us an opportunity to decrease cancer morbidity and mortality.[2] A study conducted by Moore SF, et al. in 2021 aimed to determine the effect that decreasing the threshold for declaring cancer as a potential risk has on the number of patients that become eligible to receive urgent care.[3]

Results of the study showed, not surprisingly, that considerably more patients qualified for investigations when risk thresholds were reduced by 1% and exceedingly more when reduced by 2%. These patients would normally have been overlooked and would not have been dealt with the priority they had been now assigned; considering them high risk as well. Additionally, studies have shown increased cancer referral rate to be directly linked to decreased cancer mortality.[4]

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However, with so many people now having to undergo rigorous testing to diagnose possible cancers, the question arises whether it is worthwhile to agree to spend more money and resources on seemingly low-risk patients and subsequently, impose further burdens on healthcare systems that may already be struggling financially.

Unfortunately, hundreds of thousands of Pakistanis have lost their lives to this notorious malady in just the past year and with the numbers rising[5], the idea of including even the low-risk patients in urgent investigative protocols for early determination of the presence, type, nature, and severity of cancers sounds particularly promising in providing the ones at risk a forewarning much earlier in the course of the disease which can ultimately alleviate much of the morbidity and even save lives in the thousands. Efforts must be made, of course, to make such investigational programs more efficient, for instance by targeting cancers more common in Pakistan and decreasing risk thresholds just moderately to realistically account for the limitations of our healthcare system.

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Qualitative Research

SOCIAL INTEGRATION AND ECONOMIC EMPOWERMENT OF THE TRANSGENDER: A QUALITATIVE STUDY IN LAHORE, PAKISTAN

Saira Abbas[1], Muhammad Ishaq[2], Ruhma Shahzad[3], Haider Aziz[4], Mubashra Tariq[5], Hamda Shahzad[6]

ABSTRACT

The transgender community is considered a vulnerable group globally and like other vulnerable groups, they are susceptible to various social and cultural problems and are marginalized.This study is specifically designed to explore the various issues faced by the transgender community concerning their basic needs and social and financial problems, they are facing within the cultural context of Pakistan.

Material and Methods: This study is based on the phenomenological qualitative research approach in which sixteen in-depth interviews were conducted. Ten transgender and six health professionals were interviewed (including doctors, psychologists, and nutritionists) using a semi-structured interview guide. Health professionals were included in the sample to /shed light and to get some knowledgeable data on the physical and health needs of transgender. Collected data were analyzed using the thematic analysis approach.

Findings: Findings show that the transgender community is socially excluded, marginalized, and discriminated against in society at different levels. People criticize, stigmatize, and abuse them both physically and sexually which causes an inferiority complex in them. Results also show that transgenders are deprived of basic human needs and strive to survive in society. Although they have sexual and physical needs like any other human being, however, they are more concerned about the provision of healthcare facilities, educational and job opportunities for them.

Conclusion: The study concludes that transgender is socially excluded and marginalized. Even though Pakistan as a country has officially recognized them as a third gender, still seems there is a long way for practically accepting and integrating them into the broader framework of society. There is a need to design a more inclusive multi-sectoral approached policy framework for providing equal opportunities to transgender.

Key Words: Transgender, Social Inclusion, Empowerment, Social Problems

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INTRODUCTION

The existence of transgender is documented in various historical cultures.[1-3] Transgender is an umbrella term generally used to describe people whose sexual identity and/ or gender expression is not identified at birth naturally.[4] Literature indicates that sometimes people intentionally adopt transgenic behavior, for instance, according to the Youth Birth and Gender Survey, 11% of active transgender people in the Philippines are intentionally transgenic[5], which makes it more a concern of gender identity rather than of sexual orientation.[6] However, the criteria of defining a child as a transgender because of the lack of capacity of need meeting the "general definition of the male and female body" makes it a concern of sexual identity. Transgender is considered a vulnerable group

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globally[7] and like other vulnerable groups, they are susceptible to various social and cultural problems[8] and are marginalized.[9] Evidence shows that transgender people face problems in having access to education[10-11], jobs and even basic needs like shelter[12] and health facilities[13-15], which subject them to further marginalization and various psychological problems including depression, anxiety, social isolation, and stress.[16,17] Likewise, in Pakistan, the transgender community face different social integration issues at the cultural, local as well as a national level. According to Pakistan State Times, "Lesbian, Gay, Bisexual and Transgender (LGBT) are recognized as a shame and ignominy in the Pakistani culture. They do not have permanent sources of income except dancing, singing, etc. They are bound to live outside of common societies and are not integrated into mainstream society. And in case of any physical attacks, they don't have social respect and personal life safety."[18] Evidence also shows that, due to social exclusion, transgender is only left with the option of either beggary or dancing to make their both end meets.[19,20] This lack of integration or alienation makes them vulnerable to many problems on daily basis including rejection, abuse, and harassment.[21,22] Literature indicates that transgenders' human rights do not only have a profound effect on such individuals but also badly affect a country's development. The UN's Human Rights Council has conjointly passed Human Rights, Sexual Orientation, and individual character (17/19) since 2011. Following these turns of events, the public authority of Pakistan has likewise presented legitimate changes (the Right to adjust Legal Gender, 2009; Equal Citizens, 2009; furthermore, the Rights of the Transgender Person/Protection of Rights Act, 2018). However, transgender communities are not socially included at a broader level in Pakistan as they ought to. The lack of integration of transgender into mainstream society causes many issues for this community. This study is specifically designed to explore the various issues faced by the transgender community concerning their basic needs including financial needs, physical needs, societal demands, and health needs within the cultural context of Pakistan.

MATERIAL AND METHODS

This study is based on the phenomenological qualitative research design in which in-depth interviews were conducted to get in-depth knowledge about the phenomenon. The total sample of the study was 16 participants, including 10 transgender and 6 health professionals. The transgender participants were interviewed at various fountain houses and in red light areas in the Lahore City boundaries. Health professionals (including doctors, psychologists, and nutritionists) were chosen from different hospitals in Lahore, from April 2021 to August 2021. The health professionals were included in the sample after the transgender were interviewed to gain professional and more accurate opinions on the physical and health needs of transgender.

Transgender participants were located using purposive and snowball sampling while health professionals were selected using a simple random sampling. Rapport was built with respondents and their confidence was gained. Each interview lasted for 30-40 minutes. Separate interview guides were developed to collect data from transgender and health professionals. The interview guides were developed in English under the supervision of the experts and were translated into the local language- Urdu to minimize the language barrier. The interviews were conducted in the Urdu language and were tape-recorded, afterward was transcribed and translated into English for the thematic analysis. A three-step analysis was used to analyze the qualitative data. The transcribed data were characterized into different codes (Step 1) to extract the embedded meaning in the sentences. The second step was categorization, to decide which codes were important and transform them into categories (Step 2). Then Thematic coding finds the relation between codes to categorize and to develop the themes (Step 3).

FINDINGS

Social Marginalization

Transgender is the most marginalized community in society because of the behavior and discrimination of society towards them. When the transgender was asked about the behavior of society towards them, almost all of the participants reported criticism, harassment, and abuse including both physical as well as sexual. Moreover, some of the transgender also highlighted the aspect of stigmatization and labialization by saying that people call them different and weird names like: “Chaka and Watercooler”. In addition, participants also reported social rejection and discrimination towards them. One of the transgender stated: “Some people behave well and some rejected me, make fun of me. In general, people don’t consider us human beings” while another also mentioned: “Most of the people mentioned discrimination against them”. The same participant also mentioned being discriminated against: “after the death of my father”. However, very few (only three out of ten) participants reported some positive experiences. One of the participants said that “Well-educated people treat me well”, while another added that “some of the people from society treat me properly but there are also those who don’t.” Likewise, another said: “the behavior of the police was also very good with me, they helped me many times.”

Physical and Sexual Abuse

Almost all of the participants reported incidents of sexual and/ or physical abuse. Participants mentioned incidents of physical violence by male members of families, university students as well as the general population. One of the transgender mentioned: “I faced hate from my brothers; they beat me because of the so-called honor in the society” while another participant added: “I was beaten multiple times by my brothers. Many times I was beaten. Brothers used to beat me and many times cut my hair. Faced physical assault when I went to a dance party. I started getting afraid and quit the dance for a long time.” When the participants were asked why do not get legal help to tackle the physical violence, they reported the incidents of sexual violence by saying: "Police even don’t behave well. When we go to the police to report them, they also sexually abuse us.” Two other participants also highlighted the aspect of sexual violence by mentioning the incident of gang rape, yet one of the two participants added: “I was raped by three men in my childhood, but I didn’t complain because no one listened to us.” Similarly, another participant mentioned: “I was sexually abused for the first time in class 7 after then people used me for their sexual or physical needs.” Participants also discussed how these experiences have subjected them to further marginalization and have caused an inferiority complex in them. One of the 26 years old transgender, while narrating a severe incident of gang rape mentioned: “I didn’t complain because I knew no one would stand beside me.” Furthermore, a transgender beggar while mentioning various hardships faced in life stated: “I never go to the police because we are not included in society and I know that police wouldn’t listen to me.”

Basic Needs and Issues

Every human has a few basic needs in society that are water, air, food, clothing, and a place of reproduction which are required to live a normal life. When the transgender was asked about the required necessities in life, many of them just narrated food and clothing, which highlights the extent of their marginalization. When further probed, one by one regarding each basic need, participants agreed on all the necessities however, all the participants refused to have any kind of sexual desire. Even one of the transgender, who works as a dancer in parties told: “I don’t have any sexual desires. My basic needs are food, clothing, and songs. My dignity goes down if I don’t dress well.” Similarly, another participant added: “Those who are transgender by birth don’t have sexual needs” while the rest of the participants didn’t even talk about their sexual desires, however, most

of the literature indicated the role of the transgender to be sex workers in society, therefore, the aspect of sexual desires of transgender was also probed from health professionals to get some scientific knowledge in this regard. One of the doctors negated the transgender to have any kind of sexual desires by asserting: “The people, who are genetically abnormal by birth, are intersex. Their anatomy is neither males nor females and they don’t have sexual desires.” However, one of the health professionals highlighted: “it is very normal for transgender to have sexual desires as it is in human nature however it is also a personal preference”. One of the health professionals elaborated the sexual desires of transgender as: “Yes, they do have sexual desires. They have needs according to their classification whether they are on the male side or female side. The trans who have male hormones in excess may get attracted towards the female and the trans who have a female hormone in excess get attracted towards the male. They have the same desire as females and males.”
In addition to this, health professionals also highlighted the variation in the sexual preferences of the transgender to be “heterosexual or homosexual like any other person”. All of the health professionals mentioned transgender as "normal human beings" and stated that they have physical and sexual needs as any other person. However, when the health professionals were asked about the classification of transgender into different groups, health professionals came up with different classifications. One of the doctors suggested: "transform a transgender to either male or female by surgical process", however, others suggested their categorization, as one of them said: "If a transgender has more tendency towards a male, then can be classified as male transgender/trans men and if a transgender has more tendency towards a female anatomy, then can be classified as female transgender/trans women".

Financial Problems

With being marginalized in various sectors of society, the transgender is also marginalized economically. Transgender belonging to different professions described their issues regarding their earning sources and how they are being mistreated in society. Economically their wages are very low in society. On one hand, they do not get equal job opportunities as one of the participants added: "We are treated worst than animals when we go out for jobs", while on the other hand, transgender working in their private setups of dress tailoring and/ or hair and makeup salon, report the incidents of harassment and mistreatment by the general population and their clients. One of the participants reported such an incident by narrating: “I started a shop of stitching clothes and most of the time people came and started beating me for no reason, I stayed quiet and didn’t go to the police station because I knew nobody would listen to me”
In addition to this, most of the transgender reported earning from dancing and begging. These are the only professions transgenders are left with as one transgender mentioned: “I earn from dancing. We also take WADHAI from families where a baby is born. But, now most of the people do not give us WADHAI, although it is our right", while another transgender stated: "there are thousands of us who are being pushed towards begging and dancing due to their financial needs”. However, one of the transgenders highlighted a deeper issue of lack of education facilities for transgender by stating: “Job requires education and a degree and we are not being provided with even the primary education so that we can achieve that level where we can compete with others in the job sector”.

Medical and Health Challenges

With being an unequal recipient of various benefits of society, the transgender community also lacks access to basic healthcare services. Because of being economically marginalized, transgender face hurdles in paying for their medical expenses. One of the participants mentioned: "a few days back I suffered from high blood pressure. The medicine was too costly that I quit using it because of affordability issues".

In addition to this, almost all of the participants mentioned a lack of knowledge and/ or ethics of doctors in treating transgender patients. One of the participants vocalized this issue by stating: "Sometimes I face discrimination from doctors too. First of all, I would say that they are not aware of how to treat transgender, especially young doctors harass us many times when we go for medical emergency", while another participant added: "When I get sick, I prefer to visit the aged doctors than young ones because they understand our problems and behave nicely with us". When doctors were asked about their experiences and/ or knowledge regarding treating transgender, almost all of the doctors mentioned that: "lack of extensive knowledge for treating transgender". One of the doctors mentioned: "only one topic on transgender in their whole tenure of medical graduation is taught due to which they have limited knowledge in this regard."

DISCUSSION

Transgender people are considered as a marginalized community globally as well as in Pakistan which leads to their social exclusion and economic instability[23] which further subjects them to vulnerability. The present study gives insight into how the transgender communities are socially excluded and how transgender is unequal recipients of various benefits of society including basic human needs i.e., access to earn a livelihood and access to basic healthcare services. The present study found that transgender is socially excluded, stigmatized, labeled, and are subjected to various kinds of violence including physical as well as severe forms of sexual violence. The reasons for this marginalization could be found in the deep-rooted socio-cultural boundaries of the country. Pakistan is a country having very strong social, cultural, and religious values where people have a firm belief in socio-cultural standings and people rely more on the pre-existing and unauthentic religious myths rather than on any scientific knowledge including transgender. Similarly, the findings also highlight the physical violence on transgender by the male members of the family which highlights the fragile masculine aspect of the society. Results further show that social exclusion of transgender starts from their family. Families abandon their trans children because they consider it as a mark on their honor. These results are consistent with the results of the previous studies that state that families disown their genetically abnormal children because of the fear of social stigma and social pressure.[24,25] Socially excluding and abandoning children in the initial stages of life does not only affect their social identity[26] but also restrain them from having access to various benefits and opportunities being provided in society at a broader level.[27] Likewise when transgender are abandoned by their families, survival becomes their basic concern. Findings show that transgender hardly thinks of and get access to basic educational facilities, skill development, or professional development due to which becoming a beggar, dancer, and/or prostitute becomes their only choice and a way to survive. Another sector, where transgenders are unequal recipients of services is healthcare service access and utilization[28,29] despite the evidence of high risk of HIV infection and cancer among transgender.[30] The study found that the transgender lack access to specified healthcare facilities. Doctors are not adequately trained and skilled to satisfy the health needs of the trans community and if the transgender gets access to adequate specified healthcare services, they lack finances to fulfill their medical expenses. On the other hand, findings show that some doctors, instead of providing health services to transgender, mock and harass them, which does not only highlight the extreme social exclusion of this community. This highlights that the issue of social exclusion, marginalization, and stigmatization of transgender is not a unilateral issue but is a multi-facet problem whose roots can be found in the economical, educational as well as health sector of society. Society's perception of transgender is the same as they were before, they still have

bad behaviors/attitudes towards them.[31] Transgender individuals are usually subjected to enormous social weight to conceal their identity due to their social pressure. The environment is depressive to transgender visibility as it is considered abnormal.[32] Transgender individuals are often marginalized and encounter stigma and discrimination due to their sexual orientations, gender identities, and expressions.[33,34] Transgender always faced humiliation and criticism from our society.[35] There is a tradition in society that a man or a woman can perform any task well but no other gender can do it. Because of the social pressure, people don't give jobs to trans just because of fear of the labeling.[36,37] It has been a tradition in society from the beginning that transgender people only do the job of dancing and singing well, so most of them are only given this job, while many transgender people do it to fulfill the societal pressure and their basic needs[38], despite the fact most of them do not want to get indulged in these professions anymore. Due to societal pressure and stigmatization, if someone oppresses them, they do not raise their voices against injustices. Even if they do report, they are treated differently and harassed which adds more misery to their lives. In short, social pressure is associated with rejection and discrimination, lack of support and stigma, the presence of loneliness, transphobia, and violent behavior with trans people are very common in our society.[39] Social scientists have demonstrated the pervasiveness of gender as a central organizing factor in all societies. As a system, gender is taken for granted, often completely overlooked, until the norms of gender presentation, interaction, or organization are inadvertently violated or deliberately challenged. While some believe gender is rooted in our biological make-up as a system it receives constant surveillance and is policed continually through social interactions that socialize new members of society and sanction those who violate the rules.[39] However, the awareness and acceptance should prevail that the transgender is not aliens but are normal human beings. In a world, where being transgender has been categorized as a matter of gender and not of sexual orientation. Pakistan is a country where we have not accepted them even as mere human beings due to which they are deprived of the necessities required for survival. The development of any society largely depends upon the provision of human rights and the social inclusion of various groups. In other words, a society is well developed when everyone has the equal freedom to use their capabilities and participate in social, political, and economic activities.[40] The rights of independence from segregation; equality; life; liberty; individual security; independence from torture and debasing treatment; acknowledgment of an individual under the watchful eye of the law; balance under the watchful eye of the law; and the rights to the wedding and have a family all are perceived according to Declaration of Human Rights. Trans individuals are at higher risk of homelessness, family abandonment, begging, dropping out of school, prostituting, and partner violence, than their heterosexual counterparts.[41]

UN Committees have also spotlighted the constant violation of transgender individuals' human rights including state promote execution in some countries. It States that transgender's human rights not only have a profound effect on only these individuals but also harmfully affects a country's development, therefore there is a high need to reconsider the structure of different sectors of society including health, education, and economic sectors and the overall broader structure of society in such a way that integrates transgender community in a well-mannered way and makes them an equal recipient of various services being provided at the broader level.

CONCLUSION

The study concludes that transgender is socially excluded and marginalized. Even though Pakistan as a country has officially recognized them as a third gender, still, there

is a long way to practice accepting and including them into the broader framework of society. Transgender is excluded and marginalized in various sectors of society, development in one sector cannot be achieved by neglecting the other sectors. There is a need to develop more inclusive policy approaches. Policymakers, academicians, health professionals, civil societies, and religious scholars should come together and propose multi-sectoral approaches to create acceptance for the transgender community and to socially integrate them at a broader level.

AUTHOR'S CONTRIBUTION

SA: Drafted the aricle
MI: Critical review
RS: Data analysis
HA: Data collection
MT: Literature search
HS: Data collection & literature search

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