



A CROSS-SECTIONAL STUDY TO ANALYSE MORBIDITY PROFILE OF ASYMPTOMATIC WOMEN IN REPRODUCTIVE AGE GROUP ATTENDING A HEALTH SCREENING PROGRAMME IN CENTRAL INDIA

Community Medicine

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ABSTRACT

Background: According to 2011 census 69% of the Indian population reside in rural areas. Families belonging to the Armed Forces come from all walks of life. Knowledge about the nutritional status and morbidity pattern among women of reproductive age group is essential for prevention, treatment, management of disease along with promotion of health. There is a growing interest in the life course approach for the prevention, early detection and subsequent management of morbidity in women of reproductive age to ensure optimal health and nutrition when they enter pregnancy and during motherhood. **Aims and objectives:** Objectives were to analyse morbidity profile of asymptomatic women in reproductive age group attending a health screening programme in Central India. **Methods:** Our study was a community based cross sectional study carried out from 01 May 2019 to 30 June 2019 under the aegis of Armed Forces Medical Services in Central India. During the study period 582 Married women in reproductive age group were included after applying inclusion and exclusion criteria. Data was recorded in the predesigned and pre tested proforma and were analysed by using SPSS V.20 software. **Results :** Maximum participants belonged to age group 26-30 years i.e. 224 (38.5%), followed by 19-25 years' age group, (27.1%). Mean age of the participants was 29.14 years. About 161 (27.66%) belong to overweight category, 44 (7.56%) were underweight and 32 (5.50%) women belong to obesity class I group. After screening 13 (2.2%) participants were found to be hypertensive, 3 (0.52%) were severe anaemic, 41 (7.04%) were moderate anaemic and 151 (25.95%) were having mild anaemia, 03 (0.5%) were found to be diabetic and 04 (0.7%) were in prediabetes zone. Only 8 women (1.4%) were having high cholesterol. Only 01 (0.2%) and 03 (0.5%) were diagnosed with high free T3 and T4 respectively. Elevated TSH were found amongst 73 (12.5%) participants. **Conclusion:** Our findings show a high burden of anaemia, derranged thyroid profile and overweight or obesity amongst these otherwise asymptomatic women. This information will aid policymakers in planning special programs for women of reproductive age in creating awareness about the harmful effects of lifestyle diseases and promote health seeking behaviour.

KEYWORDS

Armed Force, Morbidity Profile, Women in Reproductive Age Group

INTRODUCTION:

Optimal health and nutritional status are essential for women of reproductive age. Early screening and treatment of morbidities are important to enable women to be prepared for future pregnancy.^{1,2} Anemia, under or overnutrition, reproductive tract infections (RTIs), hypothyroidism, diabetes and hypertension have been shown to be associated with an increased risk of adverse birth outcomes such as pre-maturity or small for gestational age (SGA).³⁻⁵ Specifically, anemia has been associated with the likelihood of having a baby born with low birth weight (LBW); underweight has been associated with LBW and preterm birth; smoking has been associated with preterm birth; and hypothyroidism has been associated with preterm birth, intrauterine growth restriction and LBW.³⁻⁵

These associations have been largely based on observational studies. More recently, interventions delivered during prepregnancy and pregnancy, including additional food supplements for pregnant women with undernutrition, has been reported to increase birth weight and reduce SGA births.⁶ The lack of planning for pregnancy and low rates of contraception use are of concern, as women are underprepared to enter pregnancy.⁷ Detection and management of these morbidities through evidence-based intervention packages before pregnancy is important, as pregnancy is often reported several weeks post conception. Furthermore, some measures can be effective only when applied prior to conception, such as folic acid for the prevention of neural tube defects and adequate management of hypothyroidism.^{8,9} Reliable estimates of these morbidities in women of reproductive age are lacking in India.

Women, in general, outlive men as they have greater life expectancies.¹⁰ However, reporting some rise in life expectancy per decade does not necessarily indicate improved health scenario among women.¹¹ As per a study conducted by Hossain B et al, about 30% of the women had at least one chronic morbidity in India, and 9% had two or more morbidities.¹² When paired with reproductive and biological changes during childbearing ages, multimorbidity can lead to a

declined quality of life and well-being.^{13,14} As a result, more years of life are spent in comorbid conditions. This has resulted and has proven feminization of chronic diseases and multimorbidity.

In the backdrop of the above scenario, a study was undertaken under the aegis of Armed Forces Medical Services to find out the morbidity profile of asymptomatic women in reproductive age group belonging to families of military personnel, attending a health screening programme in Central India.

MATERIALS AND METHODS

The present study was community based cross sectional study carried out from May 2019 to June 2019 under the aegis of Armed Forces Medical Services in Central India. A total of 790 women in reproductive age group without any pre-existing medical conditions were subjected to health screening at a Field hospital catering to medical services of approximately 2000 dependent clientele.

Inclusion criteria :

Married women in reproductive age group, asymptomatic and apparently healthy individuals and attended the screening and consented to participate in the study.

Exclusion criteria :

Age more than 45 years and less than 18 years, known cases of existing co-morbidities, inconclusive sample or report and women who were unwilling to participate in the screening.

Parameters Studied :

Screening for lifestyle diseases was carried out along with basic blood investigation for all the ladies to rule out Anaemia, Dyslipidaemia, Type II Diabetes Mellitus, Hypertension & Thyroid diseases.

Sample size:

During the study period 582 Married women in reproductive age group were included after applying inclusion and exclusion criteria. The

study was conducted after approval from higher medical authority.

Data collection and analysis plan

Data was recorded in the predesigned and pre tested proforma. Results thus obtained were analysed and expressed in tables and diagrams. Descriptive statistics was done using standard statistical software. Subgroup analysis was carried out, chi square test, student t test. P value <0.05 was considered as significant.

Reports of blood investigations were intimated to the concerned individuals and advised to report back for evaluation and further management.

Ethical considerations-

Study was initiated after obtaining the informed consents from the participants and clearance from the AFMS authority.

Data analysis :

Data was recorded in the predesigned and pre tested proforma and were analysed by using SPSS V.20 software.

RESULTS

The present study was a community based Cross Sectional Study carried out from 01 May 2019 to 30 June 2019 under the aegis of Armed Forces Medical Services in Central India. A total of 790 women in reproductive age group without any pre-existing medical conditions were subjected to health screening at a Field hospital catering to medical services of approximately 2000 dependent clientele.

During the study period 582 Married women in reproductive age group were included after applying inclusion and exclusion criteria. The study was conducted after approval from higher medical authority. The present study was conducted with the objective to analyse morbidity profile of asymptomatic women in reproductive age group attending the health screening programme. Screening for lifestyle diseases was carried out along with basic blood investigations for all the ladies to rule out Anaemia, Dyslipidaemia, Type II Diabetes Mellitus, Hypertension & Thyroid diseases. Data was recorded in the predesigned and pre tested proforma. Results thus obtained were analysed and expressed in tables and diagrams. Reports of blood investigations were intimated to the concerned individuals and advised to report back for evaluation and further management.

Table 1 : Distribution of participants according to age group (n=582)

Age group	Frequency (n)	Percentage (%)
19-25 years	158	27.1
26-30 years	224	38.5
31-35 years	126	21.6
36-40 years	61	10.5
> 40 years	13	2.2
Total	582	100

Mean age of the participants was 29.14 years.

Maximum participants belonged to age group 26-30 years i.e. 224 (38.5%), followed by 19-25 years' age group, (27.1%), 126 (21.6%) 31-35 years' age group, 61 (10.5%) 36-40 years' age group and 13 (2.2%) were in the age group of more than 40 years. (Table 1)

Table 2 : Distribution of participants according to their BMI classification (n=582)

BMI Classification	Frequency (n)	Percentage (%)
Underweight	44	7.56
Normal weight	345	59.28
Overweight	161	27.66
Obesity class I	32	5.50
Total	582	100.0

Maximum women were normal weight i.e. 345 (59.28%), 161 (27.66%) belong to overweight, 44 (7.56%) were underweight and 32 (5.50%) women belong to obesity class I group. (Table 2)

Table 3 : Distribution of participants according to their BP, HB%, Sugar and Cholesterol profile. (n=582)

BP Status	Frequency (n)	Percentage (%)
Hypertensive	13	2.2
Non-Hypertensive	569	97.8

Haemoglobin status	Frequency (n)	Percentage (%)
Severe	3	0.52
Moderate	41	7.04
Mild	151	25.95
Normal	387	66.49
Sugar Status	Frequency (n)	Percentage (%)
Normal	575	98.8
Diabetic	3	0.5
Prediabetes	4	0.7
Cholesterol Status	Frequency (n)	Percentage (%)
High	8	1.4
Normal	574	98.6

After screening 13 (2.2%) participants were found to be hypertensive, 3 (0.52%) were severe anaemic, 41 (7.04%) were moderate anaemic and 151 (25.95%) were having mild anaemia, 03 (0.5%) were found to be diabetic and 04 (0.7%) were in prediabetes zone. Only 08 women (1.4%) were having high cholesterol. (Table 3)

Table 4 : Distribution of participants according to their thyroid profile. (n=582)

Thyroid profile	Frequency (n)	Percentage (%)
T3		
High	1	0.2
Normal	581	99.8
T4		
High	3	0.5
Normal	579	99.5
TSH		
High	73	12.5
Normal	509	87.5

Only 01 (0.2%) and 03 (0.5%) were diagnosed with high free T3 and T4 respectively. Elevated TSH were found amongst 73 (12.5%) participants. (Table 4)

Table 5 : Association between age and BMI (n=582)

Age group	BMI Classification								P value
	Normal weight		Obesity class I		Overweight		Under weight		
	No.	%	No.	%	No.	%	No.	%	
19-25 years	110	18.90	2	0.34	21	3.61	25	4.30	$\chi^2 - 82.557$ df - 12 P value = < 0.01 (Significant)
26-30 years	142	24.40	8	1.37	59	10.14	15	2.58	
31-35 years	65	11.17	13	2.23	46	7.90	2	0.34	
36-40 years	23	3.95	9	1.55	27	4.64	2	0.34	
> 40 years	5	0.86	0	0.00	8	1.37	0	0.00	
Total	345	59.28	32	5.50	161	27.66	44	7.56	

Maximum Obesity class I was in age group 31-35 years i.e. 13 (2.23%). Maximum overweight was seen in age group of 26-30 years i.e. 59 (10.14%).

Maximum underweight was seen in age group of 19-25 years i.e. 25 (4.30%). The finding was statistically significant at p value <0.001. (Table 5)

Table 6 : Association between Age and Blood Pressure (n=582)

Age group	Blood Pressure				χ^2 value
	Hypertensive		Non-hypertensive		
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
19-25 years	0	0.00	158	27.15	$\chi^2 - 20.459$ df - 4 P value = < 0.01 (Significant)
26-30 years	3	0.52	221	37.97	
31-35 years	4	0.69	122	20.96	
36-40 years	4	0.69	57	9.79	
> 40 years	2	0.34	11	1.89	
Total	13	2.23	569	97.77	

Maximum hypertensive were in age group 31-35 and 36-40 year i.e. 4 (0.06%) each followed by 3 (0.52%) in age group of 26-30 years and 2 (0.34%) in age group of > 40 years, The finding was statistically significant at p value <0.01. (Table 6)

Table 7 : Association between BMI and Blood Pressure (n=582)

BMI Classification	Blood Pressure				χ^2 value
	Hypertensive		Non-hypertensive		
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Normal weight	2	0.34	343	58.93	$\chi^2 - 18.316$ df - 3 P value = < 0.01 (Significant)
Obesity class I	3	0.52	29	4.98	
Overweight	8	1.37	153	26.29	
Underweight	0	0.00	44	7.56	
Total	13	2.23	569	97.77	

Maximum overweight women were hypertensive i.e. 8 (1.37%), followed by 3 (0.52%) in obesity class I group and 2 (0.34%) in normal weight. The finding was statistically significant at p value <0.01. (Table 7)

Table 8 : Association between BMI and Diabetes (n=582)

BMI Classification	Diabetes						χ^2 value
	Diabetic		Normal		Prediabetes		
	No.	%	No.	%	No.	%	
Normal weight	0	0.00	343	58.93	2	0.34	$\chi^2 - 9.818$ df - 6 P value = 0.113 (Non-Significant)
Obesity class I	1	0.17	31	5.33	0	0.00	
Overweight	2	0.34	158	27.15	1	0.17	
Underweight	0	0.00	43	7.39	1	0.17	
Total	3	0.52	575	98.80	4	0.69	

Maximum diabetic patient was in overweight group i.e. 2 (0.34%) and 1 (0.17%) in obesity class I. Maximum prediabetes were in normal weight i.e. 2 (0.34%) and 1 (0.17%) each in overweight and underweight. The finding was not statistically significant. (Table 8)

Table 9 : Association between BMI and Cholesterol (n=582)

BMI Classification	Cholesterol				χ^2 value
	High		Normal		
	Frequen cy (n)	Percentage (%)	Frequen cy (n)	Percenta ge (%)	
Normal weight	2	0.34	343	58.93	$\chi^2 - 5.874$ df - 3 P value = 0.118 (Non- Significant)
Obesity class I	0	0.00	32	5.50	
Overweight	5	0.86	156	26.80	
Underweight	1	0.17	43	7.39	
Total	8	1.37	574	98.63	

Maximum patients with high cholesterol were in overweight group i.e. 5 (0.86%), followed by 2 (0.34%) in normal weight and 1 (0.17%) in underweight. The finding was not statistically significant. (Table 9)

Table 10 : Association between BMI and Thyroid profile (n=582)

BMI Classification	Thyroid profile						P Value
	T3 (High)		T4 (High)		TSH (High)		
	No.	%	No.	%	No.	%	
Normal weight	1	0.17	3	0.52	39	6.70	T3 = 0.876 T4 = 0.558
Obesity class I	0	0.00	0	0.00	2	0.34	
Overweight	0	0.00	0	0.00	26	4.47	
Underweight	0	0.00	0	0.00	6	1.03	TSH = 0.309
Total	1	0.17	3	0.52	73	12.54	

Only 1 (0.17%) women with high free high T3 was in normal weight group. All 3 (0.52%) high free T4 patient was in normal weight group. Maximum elevated TSH was found in normal weight group i.e. 39 (6.70%), followed by 26 (4.47%) in overweight group, 6 (1.03%) in underweight group and 2 (0.34%) in obesity class I group. The finding was not statistically significant. (Table 10)

Figure 1 reveals that maximum patients were overweight (161), followed by elevated thyroid profile (77), mild anaemia (151), moderate anaemia (41), severe anaemia (3). Obesity class I was 32, hypertensive were 13, dyslipidaemic were 8 and type II DM were 7. (Figure 1)

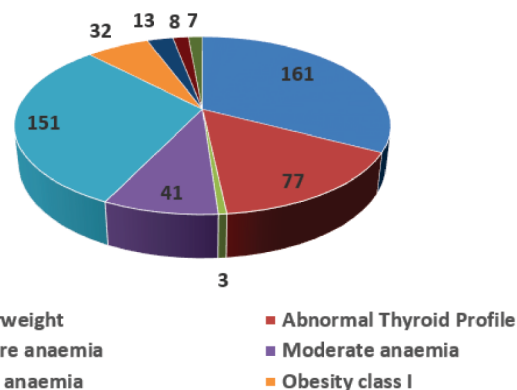


Figure 1: Morbidity Profile of Asymptomatic Women in Reproductive Age Group Attending Health Screening Camp

DISCUSSION :

In this present study, maximum participants belonged to age group 26-30 years i.e. 224 (38.5%), followed by 19-25 years' age group, 158 (27.1%), those in 31-35 years' age group were 126 (21.6%), women in 36-40 years' age group were 61 (10.5%) and only 13 (2.2%) were in the age group of more than 40 years

In a study conducted by Hemant Kumar et al found that majority of the study population belongs to 31-45 years (58%) while the rest belong to 15-30 years (42%).¹⁵ In a study conducted by Indrayudh Banerjee et al found that maximum women in studied population belonging to age group of 20-25 years.¹⁶

In our study maximum women were having normal weight i.e. 345 (59.28%), 161 (27.66%) belonged to overweight category, 44 (7.56%) women were underweight and 32 (5.50%) women belonged to Obesity class I group. Maximum Obesity class I cases were in age group 31-35 years i.e. 13 (2.23%). Maximum overweight cases were identified in age group of 26-30 years i.e. 59 (10.14%). Maximum underweight cases were seen in age group of 19-25 years i.e. 25 (4.30%). The finding was statistically significant at p value <0.001.

In a study conducted by Manjunath.T.L, et al. among women in the reproductive age group (15-49) in a rural area 58.3% had normal BMI, 14.4% were underweight, 27.2% were overweight and 6.1% were obese.¹⁷

In this present study after screening, 13 (2.2%) participants were found to be hypertensive, 03 (0.52%) were severely anaemic, 41 (7.04%) women were moderately anaemic and 151 (25.95%) women were having mild anaemia, 03 (0.5%) were found to be diabetic and 04 (0.7%) were in prediabetes zone. Only 08 women (1.4%) were having high total cholesterol. Maximum hypertensive cases were in the age group 31-35 and 36-40 year i.e. 04 (0.06%) each followed by 03 (0.52%) cases in age group of 26-30 years, 02 (0.34%) cases were found to be hypertensive amongst age group of > 40 years. The finding was statistically significant at p value <0.001.

In a study conducted by Manjunath.T.L, et al. it was concluded that 02% of the population are diabetic and 06% of the population are Hypertensive.¹⁵ In this study, the prevalence of anemia was similar to the national average reported in the National Family Health Survey; the prevalence of moderate to severe anemia was approximately 30%.¹⁸ Further analysis highlights age as a significant predictor. With age, women go through various natural physiological transformations that promote multimorbidity in some way.¹⁹

In the present study only 01 (0.2%) and 03 (0.5%) women were diagnosed with high free T3 and T4 respectively. Elevated TSH were found amongst 73 (12.5%) participants. Only 01 (0.17%) woman with high free T3 was in normal weight group. All 03 (0.52%) high free T4 patient were in normal weight group. Maximum elevated TSH was found in normal weight group i.e. 39 (6.70%), followed by 26 (4.47%) in overweight group, 06 (1.03%) cases amongst underweight group and 02 (0.34%) cases in those belonging to obesity class I group. The finding was not statistically significant

In our study, the high prevalence of hypothyroidism is of serious

concern.²⁰ In human studies, hypothyroidism during early pregnancy has been associated with an increased risk of neurocognitive deficits in offspring, pregnancy loss and placental abruption.²¹ Considering the high prevalence of hypothyroidism among women in the preconception period and its adverse impact on pregnancy and fetal outcomes, timely screening of hypothyroidism before the planning of pregnancy and adequate management is critical.

Present study shows that maximum diabetic patients were in overweight group i.e. 02 (0.34%) and 01 (0.17%) case in Obesity class I. Maximum prediabetes cases were in normal weight i.e. 02 (0.34%) and 01 (0.17%) each in overweight and underweight. The finding was not statistically significant.

In our study maximum patients with high cholesterol were in overweight group i.e. 05 (0.86%), followed by 02 (0.34%) in normal weight and 01 (0.17%) in underweight category. The finding was not statistically significant.

In the present study, maximum patients were overweight (161), followed by elevated thyroid profile (77), mild anaemia (151), moderate anaemia (41), severe anaemia (03). Obesity class I was 32, hypertensive were 13, dyslipidaemic were 08 and type II DM were 07. The prevalence of diseases was similar to the findings from another study in India.²²

The study proves that health seeking behaviour amongst asymptomatic clientele is poor even amongst individuals who are entitled free Government Medical support.

RECOMMENDATION AND CONCLUSION:

A significant association of overweight/obesity and causation of disease was established in the study. 33.51 % of women were found to be Anaemic, 13.23 % were having deranged thyroid profiles, remaining 4.8 % women showed presence of lifestyle diseases like HTN, Type II DM and Dyslipidemia. The most striking part of this study was that, these women were not aware of their underlying health conditions although they were mostly from affluent economic backgrounds with access to free medical facility, being dependents of Military personnel.

One root cause of this poor health seeking outcome may be the lack of understanding of healthy lifestyle and subsequent development of disease conditions. Most married women in Indian households are involved in day to day activities of cooking and looking after the children and do not find time for exercise or some modalities of outdoor physical activity. Long hours of watching television or spending time on the OTT entertainment platforms may be another strong reason for early onset of lifestyle diseases, although cannot be pin pointed as it was beyond the scope of this study.

All women in reproductive age group must be subjected to basic health screening at every station of posting of their spouse or whenever they are available to join the husband at a Military Station. Early detection of disease can be addressed by lifestyle modifications and counseling.

A lot more investment should be carried out in appointing health counselors and more family oriented health programs must be launched in order to address the need of an average Indian homemaker. Civil- Military fusion, that is joint effort in carrying out outreach activities for promoting health care and screening activities must be encouraged by all concerned authorities.

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