Original Article

Development Of Learning Resource For Prevention Of Iron Deficiency Anaemia For Women Employees From Selected Institutions Of Navi Mumbai

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Abstract

Background: Globally people seem to be affected significantly by one of the common type of anemia viz., Iron deficiency anaemia. There is a burden of anemia among Indian women especially in the reproductive age group as evident by the prevalence rates according to National Family Health Survey (NFHS).

Objectives: To identify prevalence of iron deficiency anemia among women employees, assess knowledge of iron deficiency anemia and to develop and validate information booklet on Iron deficiency anemia.

Methods: A descriptive research design was adopted for 175 participants from selected colleges of Navi Mumbai. The data for assessing knowledge was collected through a self-administered researcher-prepared structured questionnaire and haemoglobin estimation was carried out with a digital haemoglobinometer. The data was analyzed using SPSS version 21.

Result: The prevalence of iron deficiency among the women employees was 93.7%; of whom 52% had mild anemia and 41.7% had moderate anemia. Only 6.3% are having normal hemoglobin level. Of the total women 59.4% demonstrated very good knowledge, 18.3% had excellent knowledge and 3.4% had poor knowledge. It was associated with the demographic variables of education and marital status.

Conclusion: Findingsrevealedthatwomenhadknowledgeofirondeficiencyanemiainspite of that 97.3% found prevalent shows negligence towards theirhealth.

KEY WORDS: Iron deficiency anemia, women employees / working women, learning resource, information booklet, prevention

1. Introduction:

1.1. Background

Iron deficiency anemia is the commonest type of anemia and chronic hematologic disorder.[1] and could be a silent killer that affects life unwittingly.[2]Due to insufficient iron availability enough haemoglobin is not produced that results in iron deficiency anemia.[3] The etiology in general population is conditions like gastritis, peptic ulcer, eosophagitis and haemorrhoids. The causes of anaemia in women are heavy menstruation or menorrhagia, inadequate dietary intake and malabsorption. The manifestation of the symptoms of anaemia is found after progression of inadequacy of iron supply.[1,4] It affects 24.8% of population worldwide. In that the highest prevalence was found in preschool-age children (47.4%), and the lowest prevalence was found in men (12.7%), it was 41.8% in pregnant women and in non-pregnant 30.2%. Due to anemia women suffer from maternal

mortality and perinatal mortality. Nearly 50 percent of women of a reproductive age and 26 percent of men in the age group of 15-49 years found to be anaemic. [5] There are very less health-related research conducted on working women; work balance with home is inadequate if one ignores health. Because of unhealthy condition one could not focus on work. They are prone to health problems which affects their work productivity and vice-versa. With the investigators' experience as a working woman, it was observed that females are negligent about their health. In the view of better future, backbone of the family needs to be taken care of.

2. Methods and materials

2.1 Study design, population, area and eligibility criteria

A quantitative research approach was used by the researcher, A non-experimental descriptive research design was employed to determine the prevalence and knowledge of iron deficiency anemia among 175 women working in selected twelve institutions of Navi Mumbai between the age of 18-49 years. Pregnant women, menopausal women and those working in teaching sections of dental, nursing and pharmacy colleges were excluded.

2.2 Operational definition:

a. Iron deficiency anaemia: It referred to Haemoglobin level less than 12.0g/dl.
b. Women employees: It referred to working women in 18-49 age group (either temporary or permanent) from selected Institutes.
c. Learning resource: It referred to an information booklet consisting of information regarding causes, sign & symptoms, diagnosis, prevention and management of iron deficiency anaemia.

2.3 Sample size determination

As it was a descriptive study, availability of the sample was checked. There were total of 201 women employees in the selected institutes of Navi Mumbai of which 26 were excluded due to sample selection criteria. Thus, the current study included 175 employees available during the study period.

2.4 Data collection tool

The researcher utilised a structured self-administered questionnaire for determination of knowledge of women employees regarding iron deficiency anaemia. The questionnaire included data on demographic variables, other variables and 27 questions on awareness and knowledge of various aspects of iron deficiency anaemia based on related literature.
A digital haemoglobinometer was used to determine the prevalence of iron deficiency anaemia among the women employees.

2.5 Validation and reliability of the tool

The questionnaire consisting of 27 items was used to assess the knowledge of women employees regarding iron deficiency anaemia after validation from experts. The tool was tested for reliability by a test-retest method. The questionnaire was found to be highly reliable. The reliability coefficient was 0.9253 using Cronbach's Alpha.
The reliability of the digital haemoglobinometer was done by methodology of Reflectance Photometry with the accuracy of Venous blood: $Y= 0.9582X+0.5673$, $R^2= 0.992$.

2.6 Data quality assurance

The data was collected by the researcher by following proper procedure. The data was collected by the questionnaire that was duly validated. It was pretested by a pilot study with 10% of the population prior to actual data collection. The findings of the pilot study were not included in the final study. A few changes in the demographic questions as required were carried out. This improved the feasibility in the main study and gave clarity on the questionnaire and response of the participants. The haemoglobin level was checked by the Digital

haemoglobinometer. A proper stepwise procedure was followed with due sterile techniques. The scoring of data collected from the 27-itemed knowledge questionnaire was categorised as poor knowledge (score of 0-25%), good knowledge (score of 25-50%), very good knowledge (score of 50-75%) and excellent knowledge (75-100%). The prevalence of iron deficiency anaemia was classified as mild (Hemoglobin level of 10-12g/dl), moderate (Hemoglobin level of 6-10g/dl) and severe (Hemoglobin <6g/dl).

2.7. Data analysis and presentation

The data collected was coded and analysed using SPSS version 21 according to objectives of study. After data collection data was entered in to master data sheet in excel. Data was analysed using descriptive and inferential statistics and according to objectives and hypothesis of the study. The data was presented using tables and graphs.

2.8 Development of the learning resource:

After analysing the data, the researcher developed an information booklet on "**Information on Iron deficiency anemia for working women**". These booklets were distributed to all the women that participated in the study. The booklet was prepared by the researcher based on the findings of the study and an extensive review of literature. The content was validated by experts and was modified as per the suggestions to make it more user-friendly.

2.8 Ethical considerations:

The Ethical Committee clearance was obtained from the Institutional Ethics Committee. Authorities of the respective Institutes were informed about the purpose of the study and permission was obtained for data collection. The consent was duly taken from the participants after giving information about the study and were assured of confidentiality.

3. Results

3.1 Demographic characteristics of participants

Out of 175 participants, the majority of women (56.6%) belonged to the age group of 31 – 40 years. Maximum i.e., 90.9% women employees were Hindus, 2.3% were Muslims and 1.7% were Christians. Regarding their educational status, 74.3% had a professional degree or were postgraduate. Among the total participants, 156 (89.1%) were married and 15 (8.6%) were unmarried. Majority of the women (29.7%) belonged to a family with three family members and 76% women employees had two working members in family. 59.4% women employees had monthly family income of Rs. 78,063 and above. (Table 1)

Table 1 Demographic characteristics of women employees

Variables	Category	Frequency & Percentage (%)
Age in years	18 – 30	29 (16.6)
	31 – 40	99 (56.6)
	41 – 49	47 (26.9)
Religion	Hindu	159 (90.9)
	Muslim	4 (2.3)
	Christian	3 (1.7)
	Others	9 (5.1)
Educational status	Professional Degree / Post Graduate and above	130 (74.3)
	Graduate	34 (19.4)
	Intermediate/diploma	4 (2.3)
	High school	4 (2.3)
	Middle school	3 (1.7)

Marital status	Married	156 (89.1)
	Unmarried	15 (8.6)
	Divorce/ Separate	3 (1.7)
	Widow	1 (0.6)
Family size	1	1 (0.6)
	2	6 (3.4)
	3	52 (29.7)
	4	47 (26.9)
	5	34 (19.4)
	6	19 (10.9)
	7	9 (5.1)
	8 and more	7 (4.0)
Working Members in family	1	7 (4.0)
	2	133 (76.0)
	3	25 (14.3)
	4	8 (4.6)
	5	1 (0.6)
	6	1 (0.6)
Monthly Income (Rs)	78,063 and above	104 (59.4)
	39033 – 78062	50 (28.6)
	29200 – 39032	6 (3.4)
	19516 – 29199	9 (5.1)
	11708 – 19515	5 (2.9)
	3908 – 11707	1 (0.6)
	3907 and Less	0 (0)

3.2 Other characteristics of participants

Regarding the other characteristics, it was found that maximum (87.4%) of women employees reported to have a regular menstrual cycle however 12.6% had an irregular menstrual cycle. 4% of women employees reported of reproductive morbidities like endometrial hyperplasia and polycystic ovarian disease (PCOD). 15.6% women employees had history of abortion. 14.9% reported to have other health problems such as thyroid problems, vitiligo, vertigo, dust allergy, hypotension, hypertension, Diabetes Mellitus, arthritis. 3.4% women employees reported of then diagnosed to have iron deficiency anaemia whereas 86.3% had never suffered from iron deficiency anaemia. (Table 2)

Table 2 Other characteristics of women employees

Variables	Category	Frequency & Percentage (%)
Menstrual cycle	Regular	153 (87.4)
	Irregular	22 (12.6)
Menstrual Morbidity	Yes	7 (4.0)
	No	168 (96.0)

History of Abortion	Yes	27 (15.6)
	No	148 (84.0)
History of previous pregnancy	No Pregnancy	38 (21.7)
	Up to 2 years	16 (9.1)
	2.1 to 4 years	14 (8.0)
	More than 4 years	107 (61.1)
History of illness	Yes	26 (14.9)
	No	149 (85.1)
History of Iron Deficiency anaemia	Never diagnosed	151 (86.3)
	Presently diagnosed	6 (3.4)
	In the last six months	3 (1.7)
	Any time before	15 (8.6)

3.3 Awareness about of iron deficiency anaemia

56% of women employees had heard about iron deficiency anaemia; knew as a general information or from physician or from their friends; through internet or when had been diagnosed by iron deficiency anaemia. Only 29.7% were aware about availability of free iron supplements at Government hospital.

Table 3 Awareness of women employees regarding iron deficiency anaemia

Variables	Category	Frequency & Percentage (%)
Heard of Iron deficiency anaemia	Yes	98 (56)
	No	77 (44)
Aware about availability of free iron supplements at Government hospital	Yes	52 (29.7)
	No	123 (70.3)

3.4 Prevalence of iron deficiency anaemia among women employees

Overall, 93.7% women employees were detected to have iron deficiency anaemia. Of the total participants, 52 % had mild anemia (Hb: 10 0 – 11.9 g/dl) and 41.7% had moderate anemia (Hb: 6 – 9.9 g/dl). Regarding the level of hemoglobin, lowest level found was 6.3g/dl and highest level was 13.1g/dl in the span of study.

Table 4 Prevalence of Iron deficiency anaemia among women employees

Level of Haemoglobin	Score (gm/dl)	Frequency	Percentage
Normal	12.0 – 15.5	11	6.3
Mild	10 0 – 11.9	91	52.0
Moderate	6 – 9.9	73	41.7
Severe	<6.0	0	0.0
Total		**175**	**100.0**

3.5 Knowledge of women employees regarding Iron deficiency Anaemia

Table 5 depicts that 59.4% women employee possess very good knowledge, 18.9% had a good knowledge, 3.4% had poor knowledge whereas 18.3% had an excellent level of knowledge about iron deficiency anemia.

Table 5 Knowledge scores of women employees regarding Iron deficiency anaemia

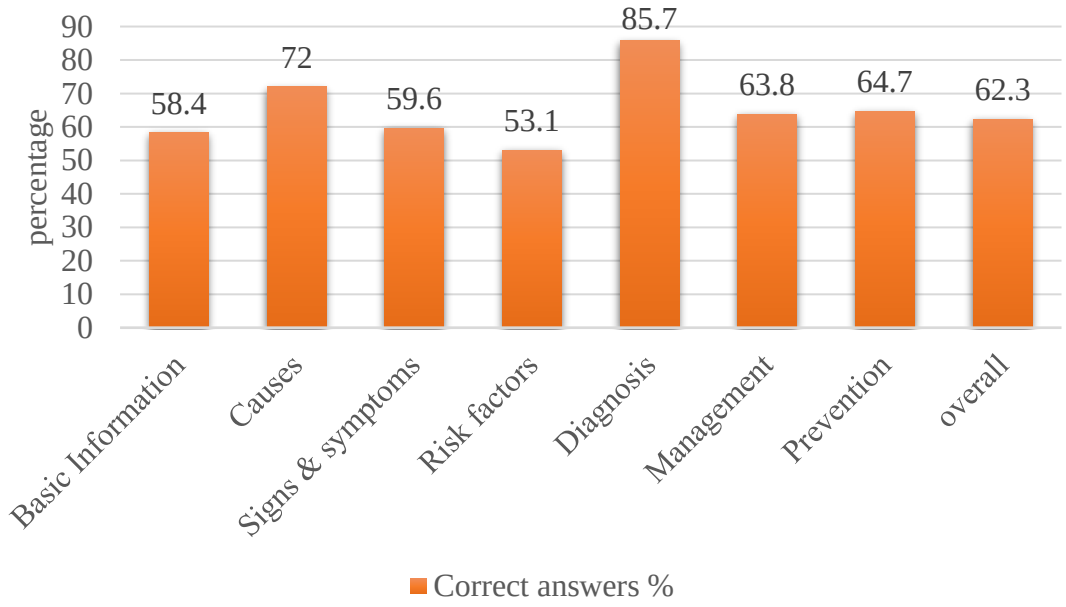
Knowledge level category	Score	Frequency	Percentage
Poor	0 – 8 (25%)	6	3.4
Good	9 –16 (26 - 50%)	33	18.9
Very Good	17 – 24 (51 to 75%)	104	59.4
Excellent	25 -32 (76 to 100%)	32	18.3
Total		**175**	**100.0**

Table 6 Knowledge of women employees regarding iron deficiency anaemia

Descriptive Statistics	n	Minimum	Maximum	Mean	SD
Knowledge	175	6	29	19.95	5.00

The data in above table 6 shows mean and standard deviation of knowledge among women employees regarding iron deficiency anemia with mean 19.95 and SD 5.00

Figure 1 Distribution of knowledge of women employees according to aspects of Iron deficiency anaemia



It was found that majority (85.7%) of respondents had knowledge about diagnosis of anaemia and 72% about its causes. They had least knowledge regarding risk factors (53.1%), basic information (58.4%) and signs and symptoms (59.6%) of iron deficiency anaemia. (Figure1)

Table 7 Association of knowledge level regarding iron deficiency anemia and selected demographic variables

Variable	Chi Square value	df	p-value	Significance at 5% level
Age	10.646	6	0.100	NS
Religion	6.039	9	0.736	NS
Education	23.512	12	0.024	S
Marital Status	30.725	9	<0.001	S
Type of family	7.756	6	0.257	NS

(NS: Not Significant; S: Significant)

As per table 7, the chi-square value of variables of education and marital status were found significant at 0.05 level ($p<0.05$). Thus, hypothesis H_0that there is no association between knowledge of women employees regarding iron deficiency anemia and selected demographic variables at 0.05 level of significance was accepted for age, religion and types of family except for variables of education and marital status.

4. DISCUSSION

The findings of the study were consistent with those conducted by Geethanjali N and Mamta et al to assess the knowledge of women in reproductive age group (18-45 years). All the demographic characteristics of participants were included like family income, family size, history of abortion, menstrual history and associated co-morbidity etc.[6,7]

Earlier prevalence studies by Saydam BK et al have found the prevalence of iron deficiency anaemia to high as of 93.7% in working women who are menstruating and not entered menopause.[8] Another similar study by Mogahed M reported prevalence of 27.8% in a similar sample.[9] Whereas, a cross sectional study through large epidemiological survey that was conducted in China by Ma Q et al among 7,12,101participant women between the age group of 18-49 years who were not pregnant reported less prevalence than global i e 0.24%.[10] A similar descriptive study conducted in India by Mamta, analysed 92.5% prevalence with fifty percent from mild anemia.[7] Mishra P et al conducted a cross-sectional study in Ambala, India to calculate prevalence of anemia in reproductive age group between 15-45 years age women. Prevalence was found 96.8% where majority 75.3%were suffering from mild, 16.9% suffering from moderate and severe anemia carried by 7.8% women.[11] From above prevalence study it was seen that relatively high prevalence seen in India which depicts depth of problem. Regarding the knowledge of women, study by D'Souza, P J J have reported lower levels of knowledge; more than half of the women had inadequate knowledge.[12] The levels of knowledge are low from adolescent age and same has been observed in women in studies by Patimah S, Hussain T and Johnson N et al. [13, 14, 15]

In the current study, a statistically significant association was found between knowledge of women employees regarding iron deficiency anemia and variables of education and marital status. These findings were similar to study by Mamta et al. [7]

5. Conclusion

Iron deficiency anemia is a prevalent health issue found in India. The researcher conducted a study to assess prevalence and knowledge of iron deficiency anemia among women employees in a view to develop information booklet in a selected institute of Navi Mumbai. Overall all women employees were found to be anaemic i.e. 93.7% prevalence was seen in women employees. In that 52 % of women employees were suffering from mild anemia and 41.7% of women employees had moderate anemia. Considering the knowledge part majority i.e.59.4% women employee possesses very good knowledge and 3.4% had poor knowledge about iron deficiency anemia. A significant association between education and marital status and knowledge score of women employees was seen after computing chi-square test. It was seen that despite a good knowledge they were having high prevalence of 97.3% with the lowest level of Hemoglobin was 6.3g/dl & 6.7g/dl and highest level was 13.1g/dl. Normal Hemoglobin level was found in only 6.3% of population. It was suggestive of negligence of women towards their health. It can be concluded that there should be more aware campaigns to improve the knowledge of working women regarding iron deficiency anemia and conduct intervention studies that focus on implementing the preventive measures against anemia. This would in turn reduce the burden of illness - general and reproductive.

6. CONFLICT OF INTEREST

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

7. FUNDING SOURCE

There is no funding source for this study.

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