

Efficacy of Planned Teaching on Knowledge Regarding Diet Practices Leading to Obesity and Its Hazards among Middle Aged Women

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Abstract: A study was aimed to assess the efficacy of planned teaching on knowledge regarding Diet practices leading to Obesity and its Hazards among middle aged women in selected area of Chandrapur District, Objectives were To assess the existing knowledge of the middle aged women regarding the Diet practices leading to Obesity and its Hazards, To evaluate the efficacy of planned teaching on knowledge regarding Diet practices leading to Obesity and its Hazards among middle aged women and To associate the knowledge regarding the Diet practices leading to Obesity and its Hazards among middle aged women with demographic variables. Methodology- Interventional approach is used in this study. one group pretest post test research design was used for the study. A pretest was administered by means of structural questionnaire depicted and then planned teaching was conducted. A post test was conducted using the same structured questionnaire. This study was conducted in selected area of Chandrapur, With target population was the 60 middle aged women. The sampling technique used in the study was non probability convenient sampling. Findings- Among the selected subjects 51.6% of were Hindus, 40% had income in the range of 21000 - 25000 while 36.66% 45% of them were graduates while 6.66% were post graduates. In pre test the mean score percentage of middle aged was 39.09%. The minimum score in pretest was 8 and the maximum score was 16. In post test the mean score percentage of middle- aged women was 82.22%. The minimum score in post test was 21 and the maximum score was 33. The tabulated value for $n=60-1$ i.e 59 degrees of freedom was 2.00. The calculated 't' value for all the areas were much higher than the tabulated value at 5% level of significance which is statistically acceptable level of significance. In addition the calculated 'p' values for all the areas of knowledge regarding diet practices leading to obesity and its hazards was 0.000 which is ideal for any population. Conclusion- it is concluded that the planned teaching program regarding diet practices leading to obesity and its hazards was effective.

Keywords: Efficacy, Teaching, Knowledge, Diet Practices, Obesity, Middle Aged Women.

1. Introduction

Learning is the addition of new knowledge and experience Interpreted in the light of past knowledge and experience. Teaching and learning is an integral part of nursing. Nurses have the responsibility to educate patients related to various aspects and keep themselves updated. Various teaching strategies are used to increase knowledge, such as lecturing, demonstration, discussion and self-education. These methods of self-education has an advantage over the others as the learner can educate himself at his own pace and it also stresses on rereading [1].

Obesity is increasing at an alarming rate throughout the world and has become a global epidemic. The World Health Organization (WHO) (2002) has declared overweight as one of the top 10 health risks in the world and one of the top five in developed nations[2], Popkin (2002) quotes that even in countries like India, which are typically known for high prevalence of under nutrition, a significant proportion of overweight and obese people now coexist with those who are under nourished[3]. "Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese. A person

with a BMI equal to or more than 25 is considered overweight." [4].

2. Review of Literature

Literature review is a critical summary of research on a topic of interest generally prepared to put a research problem in context or to identify gaps and weakness in prior studies so as to justify a new investigation.[5]

Efficacy of planned teaching.

Kadam,A.(2014) found that Structured education programme was highly effective to improve the knowledge score and to improve the attitude score of subjects/ caregiver towards colostomy care of patient [6]. Anjum,S.(2014)conducted study to assess knowledge of contraceptives methods and appraisal of health education among married women and concluded After the health education married women knowledge was improved to 100% about female sterilization followed by condom 99%, skin implants 86%, oral pills 85% and emergency contraceptives 85%.Sociodemographic variable were significantly associated with existing knowledge and level of married women specially age at marriage, age at first child, occupation,, income ,education [7][8]. Babu, R. L. (2014) The findings of the study concluded that care takers had inadequate knowledge

regarding non-curative care of terminally ill cancer patients. The planned education programme on non-curative care of terminally ill cancer patients was highly effective in improving the knowledge of care takers regarding non-curative care of terminally ill cancer patients.[9] Shinde, M. (2014) concluded that demonstration regarding feeding of hemiplegic patient among caregivers was effective in increasing the skill of the caregivers regarding feeding of hemiplegic patient [10].

Deshmukh, M., & Shinde, M. (2014). concluded that the structured education was effective on knowledge and practice of staff nurses regarding venous access device care[11]. Bhudhagaonkar, J., & Shinde, M. (2014). Concluded that Structured Education Regarding Menstrual Hygiene Practices was effective among Adolescent Girls.[12]

Gupta and Kochar (2009), in their article "Dietary and Socio-Economic Factors Associated with Obesity in North Indian Population", have mentioned that obesity can be seen as the first wave of a defined cluster of non-communicable diseases called "New World Syndrome," creating an enormous socioeconomic and public health burden in poorer countries. The World Health Organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe[13].

Flier (2004), mentions that data regarding the nutritional status of adults, as determined by body mass index (BMI), indicates that 50% of Indian adults suffer from different types of chronic energy deficiency, in that they have a BMI < 18.5 kg/m². In the same survey, it was observed that the BMI values were similar in men and women; however, there were more overweight/obese (BMI ≥ 25 kg/m²) women (6.6%) than men (3.5%).

Flier summarizes the many possible pathophysiological mechanisms involved in the development and maintenance of obesity. Since the discovery of Leptin in 1994, many other hormonal mechanisms have been elucidated that participate in the regulation of appetite and food intake, storage patterns of adipose tissue, and development of insulin resistance. Since leptin's discovery, ghrelin, insulin, orexin, PYY 3-36, cholecystokinin, adiponectin, as well as many other mediators have been studied [14].

A deficiency in leptin signaling, either via leptin deficiency or leptin resistance, leads to overfeeding and may account for some genetic and acquired forms of obesity[14]. Vella and Kravitz (2008), have shared a fact that, fat cells can increase or decrease in size, but once a fat cell develops it is a permanent cell in your body, except for way of liposuction [15].

Kumar and Abbas (2005), have stated that obesity is a disorder with a multifactorial etiology. According to the literature, only rarely does it result from a single gene disorder[16]. Leptin, as described above, is the product of the OB gene. Animal studies have shown that mutations in this gene (OB/OB) result in an absence of leptin secretion, which leads to obesity. There are six single gene defects that

give rise to human obesity, and all of them involve proteins in the leptin-melanocortin pathway[14].

According to Odom (2006), estrogen is recognized to help regulate food intake. After puberty in females, estrogen modulates leptin synthesis and secretion directly, and leptin fluctuations during the menstrual cycle directly correlate with estrogen levels [17].

Blaak (2001), in his study, "Gender differences in fat metabolism", suggests that women who are less involved in labour intensive household chores had experienced a significant increase in their BMI status indicating that a more sedentary lifestyle and less physical activity leads to an increase in the BMI status over a period of time[18]

The National Family Health Survey (NFHS-3) 2005–2006 data showed that combined prevalence of obesity was 9.3% and 12.6% among men and women aged 15–49 years respectively. NFHS data showed that the prevalence of overweight in women and pre-school children did not increase much in the last decade: 10.6% and 1.6% in 1998–1999 to 12.6% and 1.5% in 2005–2006 respectively. Among these women middle-aged group consisted of 23.7% women, urban women were numbered to be 23.5%, 23.8% were qualified women while 30.9% were upper class women. The percentage of ever-married women aged 15–49 years who were overweight or obese increased from 11% in NFHS-2 to 15% in NFHS-3.

Agrawal and Mishra (2004), state that women generally have a higher percentage of body fat than men. Also, women store more fat in the gluteal-femoral region, whereas men store more fat in the visceral (abdominal) depot. There are indications that basal fat oxidation (adjusted for fat free mass) is lower in females as compared to males, thereby contributing to a higher fat storage in women [19].

Problem Statement

"A study to assess the efficacy of planned teaching on knowledge regarding Diet practices leading to Obesity and its Hazards among middle aged women in selected area of Chandrapur District, Maharashtra."

Objectives of the Study

1. To assess the existing knowledge of the middle aged women regarding the Diet practices leading to Obesity and its Hazards.
2. To evaluate the efficacy of planned teaching on knowledge regarding Diet practices leading to Obesity and its Hazards among middle aged women.
3. To associate the knowledge regarding the Diet practices leading to Obesity and its Hazards among middle aged women with demographic variables.

3. Operational Definitions

1. **Assess:** - In this study assess means to find out knowledge regarding diet practices leading to obesity and its hazards.
2. **Efficacy** - In this study efficacy means change in the knowledge score as elicited by structured questionnaire.
3. **Planned Teaching** - In this study planned teaching is a meaningful interaction between the researcher and the middle aged women by using prepared teaching program in relation to diet practices leading to obesity and its hazards.
4. **Knowledge** - In this study knowledge means responses of middle aged women using structured questionnaire.
5. **Diet** - In this study diet means the pattern (contents) of food which leads to obesity and its hazards.
6. **Practice** - In this study practice means exercising a certain diet pattern that further leads to obesity and its hazards.
7. **Middle-aged** - In this study it means an age group of 35-55.
8. **Obesity:** Obesity means excessive development of fat throughout the body. A body mass index (BMI) of over 30.
9. **Hazards:** In this study it means harmful health consequences caused from obesity.

Scope of the Study

Adequate knowledge regarding the diet practices leading to obesity and its hazards will help to create an understanding about the topic among the subjects and in turn reduce the threat of obesity induced diseases in the middle aged women in Selected Area of Chandrapur District, Maharashtra.

Education programs can be planned for middle aged women with their consent according to their level of understanding.

Hypotheses

1. H_0 – There is no significant difference between the pre test and post-test knowledge regarding diet practices leading to obesity and its hazards which is measured by structured questionnaire at $p < 0.05$ level of significance.
2. H_1 - There is significant difference between the pre test and post-test knowledge regarding diet practices leading to obesity and its hazards which is measured by structured questionnaire at $p < 0.05$ level of significance.

Assumptions

The researcher assumes that,

1. Middle aged women have some knowledge regarding diet practices leading to obesity and its hazards.
2. Planned teaching acts as a reference to overcome doubts and it may increase the knowledge regarding diet practices leading to obesity and its hazards.

Limitation

The planned teaching on diet practices leading to obesity and its hazards is helpful only to the middle-aged housewives of

selected area of Chandrapur District, Maharashtra, who can read and write Marathi and are readily available at the time of study.

Ethical Aspects

The proposal of this study had been scrutinized and sanctioned by the ethical committee for its conduction. The necessary permission was taken from the Gram Panchayat of the area for conducting the pilot study and the main study. Written consent was taken from every participant before collection of data.

Research Methodology

Research Approach

Interventional approach is used in this study.

Research Design

In the present study one group pretest post test research design was used for the study. A pretest was administered by means of structural questionnaire depicted and then planned teaching was conducted. A post test was conducted using the same structured questionnaire.

Setting of the Study

Setting is the physical location and condition in which data collection takes place. This study was conducted in selected area of Chandrapur District, Maharashtra.

Population

A population is the entire aggregation of cases in which a research is interested. In this study the population was all the middle aged women of Maharashtra.

Target population

In this study the target population was the middle aged women of selected area of Chandrapur District, Maharashtra.

Independent variable:-

The independent variable in this study was planned teaching on diet practices leading to obesity and its hazards.

Dependent variable:-

The dependent variable in this study was knowledge regarding dietary practices leading to obesity and its hazards.

Sample

In this study, subjects were middle-aged women who were fulfilling the inclusion and exclusion criteria.

Sample Size

In this study sample size was 60 middle aged women from selected area of Chandrapur District, Maharashtra.

Sampling Technique

The sampling technique used in the study was non probability convenient sampling.

Inclusion criteria

- Age-group of 35-55 yrs.
- Women who could read and write Marathi

Exclusion criteria

- Women in families of health personnel

Tool Preparation

Structured Questionnaire

Section I consists of socio-demographic variables of the subject eg. religion, income, family members etc

Section II consists of 33 questions on knowledge regarding, obesity, dietary practices leading to obesity, hazards of obesity its prevention and control.

Scoring

- Score 1 was given for correct answer
- Score 0 was given for wrong answer

Validity

In order to obtain content validity, the tool was given to 11 experts who included one language expert, two from Department of Preventive Social Medicine and others from Department of Community Health Nursing. After receiving opinions from the experts and consultation from the guide some modifications were done in framing the item and same were incorporated in tool.

Reliability

Reliability of the tool is a major criterion for assessing the quality and accuracy. It is the degree of consistency with which it measures the attribute. Reliability analysis was done by Guttman split half coefficient and was found 0.837114.

Pilot Study

The pilot study was conducted in nearby village other than the area selected for main study from 24th June to 1st July 2013 as per laid down criteria. 10 subjects were selected from the village for pilot study from non probability convenient sampling technique. The pre test was given and simultaneously planned teaching was conducted and after seven days post test was conducted and score was improved.

The findings of the pilot study were analyzed. It was evident that the middle aged women had inadequate knowledge regarding Diet Practices leading to Obesity and its Hazards. The subjects who were included in the pilot study were excluded in the main study.

Feasibility of the Study

On conducting the Pilot study the researcher did not find any difficulty in getting subjects or data collection procedure. Thus the study was considered to be feasible for the researcher.

Method of Data Collection

The data gathering process began from 8th July to 20th July 2013. The researcher visited the middle aged women of area selected for main study in advance and obtained the necessary permission from the concerned authorities. The researcher introduced herself and informed them about the nature of the study so as to ensure better cooperation during the data collection.

The researcher personally approached each subject and explained the purposes of the study and explained how it will be beneficial for them. She confirmed their willingness to participate in the study. The researcher collected a group of subjects, made them comfortable and oriented them to the study and administered questionnaire to them, instructed them not to interact with each other and their doubts were clarified. Once the questionnaire was completed, researcher collected them back. The subjects required mean time of 30 min. to complete the structured questionnaire. After the pretest planned teaching was conducted by the researcher. They were instructed to attend the planned teaching session at their convenient time and were informed to appear for retest after 7 days.

Post test was administered with the same questionnaire on the 7th day. The collection of data was performed within the stipulated time. After the data gathering process the researcher thanked all the study subjects as well as the authorities for their cooperation.

4. Major Findings

Section A

- Among the selected subjects 51.6% of were Hindus, 10% were Christian and 6.66% were Muslim and 31.6% were others.
- In 8.3% of the families there were two members, in 35% there were three, in 46.6% there were four members and in 8.3% there were more than four members in their families.
- 23.33% of subjects' family income was in the range of 16000-20000 and 40% had income in the range of 21000 - 25000 while 36.66% had family income in the range of 26,000 – 30,000.
- 8.33% of subjects were educated up to SSC, 40% were educated up to HSC and 45% of them were graduates while 6.66% were post graduates.

Section B

This section dealt with the assessment of knowledge regarding the diet practices leading to obesity and its hazards among middle aged women in selected area of Maharashtra.

In pre test the mean score percentage of middle aged was 39.09%. The minimum score in pretest was 8 and the maximum score was 16.

In post test the mean score percentage of middle- aged women was 82.22%. The minimum score in post test was 21 and the maximum score was 33.

Section C

This section dealt with the evaluation of effectiveness of planned teaching on knowledge regarding diet practices leading to obesity and its hazards among middle aged women.

Significance of difference at 5% level of significance is tested with 't' test and tabulated 't' value is compared with calculated 't' value. Also the calculated 'p' values were compared with acceptable 'p' value i.e. 0.05. Mean, standard deviation and mean score percentage values were compared

and t test is applied at 5% level of significance. The tabulated value for $n=60-1$ i.e. 59 degrees of freedom was 2.00. The calculated 't' value for all the areas were much higher than the tabulated value at 5% level of significance which is statistically acceptable level of significance. In addition the calculated 'p' values for all the areas of knowledge regarding diet practices leading to obesity and its hazards was 0.000 which is ideal for any population. Hence it is statistically interpreted that the planned teaching program regarding diet practices leading to obesity and its hazards. Thus the H_1 is accepted and null hypothesis was rejected.

Section D

This section deals with association of knowledge scores with demographic values and the findings were as follows:

- **Religion** The calculated 'p'=0.48 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that the religion of middle aged women in selected area of is not associated with their post test knowledge scores.
- **Number of Family Members** The calculated 'p'=0.25 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that the religion of middle aged women in selected area of is not associated with their post test knowledge scores.
- **Family income** The calculated 'p'=0.40 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that the monthly family income of the middle aged women in selected area of Maharashtra is not associated with their post test knowledge scores.
- **Educational status** The calculated 'p'=0.32 which was much higher than the acceptable level of significance i.e. 'p'=0.05. Hence it is interpreted that the educational status of the middle aged women in selected area of Maharashtra, is not associated with their post test knowledge scores.

Thus the researcher found no significant association between the demographic variables and the post test knowledge score.

5. Discussion

This section presents a discussion of the findings against the main objectives of the researcher behind the study, to assess the efficacy of planned teaching regarding diet practices leading to obesity and its hazards among middle aged women, on the basis of the previously performed researches.

The first objective of the study was to assess the existing knowledge of the subjects regarding diet practices leading to obesity. From the literature reviewed in Chapter II it is evident that snack, convenience, and fast foods and sweets continue to dominate food choices of children as well as adults[20]. Also there are evidences of people underestimating the calorie strength and future hazards of such food [21]. On conducting pre-test it was evident that the knowledge of subjects regarding diet practices was not satisfactory.

As for the efficacy of planned teaching, by comparing the pre test and post test results and analyzing the comparison with inferential statistics it is evident that the planned teaching had

significant effect on the subjects' knowledge regarding diet practices leading to obesity and its hazards. According to Kahn b et al; informational approaches are designed to increase physical activity by providing information necessary to motivate and enable people to change their behavior, as well as to maintain that change over time[22].

The third objective was to identify the association between demographic variables and the subjects' knowledge score. Obesity is a matter of talk among most individuals, especially in this era of media and technology every other day; subjects get to hear about the fundamental information of this issue for example 'Hazards of Obesity'. Still the lack of information about the etiological factors triggered the need of intervention by the researcher. The post – test knowledge scores showed that the information provided by the researcher in the form of planned teaching lead to a uniform improvement in the knowledge scores of the subjects. Santhi M D et al; (2013) in a similar study conducted over mothers regarding newborn care found no association between the demographic variables and knowledge scores. She quotes that information on newborn care for all mothers in their own language creates uniform awareness irrespective of their socio- demographic characteristics[23].

6. Conclusion

According to the National Health and Family Survey Report, India possesses fifth largest number of obese people in the world among which number of women is far higher than men. The main reason for this transition is the underestimation of fast foods and sugary drinks in terms of their calorie content and nutritive value. Also many women consider their children to be 'Healthy' or 'Chubby' while they already have higher than normal BMI.

In this concern the researcher conducted a study to understand the effectiveness of a planned teaching on the existing knowledge of middle aged women regarding Diet practices leading to Obesity and its Hazards. On assessing the pre test score it was evident that the subjects had very little knowledge about diet practices leading to Obesity and its Hazards. There was a significant increase in the knowledge of subjects after conducting planned teaching program. To find the effectiveness of planned teaching program students' paired 't' test was applied and t value was calculated, post test score were significantly higher at 0.05 level than that of pre test score. Thus it was concluded that planned teaching program on diet practices leading to Obesity was found effective as a teaching strategy.

Demographic variables did not show a major role in influencing the pre test and post test knowledge score among subjects.

Hence, based on the above cited findings, it was concluded undoubtedly that the planned teaching program effectively increased the knowledge of the subjects, regarding the diet practices leading to Obesity and its Hazards, equally, irrespective of their varied demographic characteristics.

7. Nursing Implication

The findings of this study have implications for nursing practice, nursing education, nursing administration and nursing research.

Nursing Services

Nurses in advanced practice positions may find routine assessment skills difficult. Inspection of skin and bony structures is difficult due to the excess amount of adipose tissue and loss of landmarks due to excess fat. Assessment procedures like auscultation and palpation are also difficult because of the large amounts of adipose tissue, and thorough evaluation of heart, lung, and bowel sounds is impaired that in turn impairs the diagnosis. Every nurse needs to develop self-awareness of the overt and covert messages conveyed to obese patients about their weight, their weight loss efforts, and especially their weight control failures. Nurse practitioners are in a wonderful position to educate patients regarding diet and exercise, as well as help with the maintenance of appropriate weight and identification of those at risk for overweight and obesity. Nurses play an important role in promoting preventative measures and encouraging positive lifestyle behaviors, as well as identifying and treating obesity-related co-morbidities. They also have a role in counseling patients about safe and effective weight loss and weight management programs.

Nursing Education

Obesity may be an old known physical parameter but it is a new Disease. This study justifies the need to consider Obesity and Overweight as a condition that requires medical intervention and include it in the curriculum as a study area. Also Continuing Education in this aspect would help the professional nurses to be acquainted with this 'New world Syndrome'. This would not only help the nurses to know about this recently growing epidemic but also it would help the nurses to educate her clients and community about Obesity and its causes and thus prevent associated risks.

Nursing Administration

As a Nursing Administrator one can use the findings of this study as a topic for conducting group discussions, symposiums and continuing education programs. This would not only update the knowledge of nursing staffs, but also recommendations suggested by the participants may be of significant help in modifying policies and planning of the Government in the areas of prevention and rehabilitation.

Nursing Research

This research is an attempt to update the existing level of knowledge regarding diet practices leading to Obesity. Nursing researchers find their basis of study in the findings revealed in earlier studies. The results of this study would trigger a researcher's instinct to conduct further studies in the field of prevention and control etc.

References

[1] Shinde, M., & Anjum, S. (2007). Educational Methods and Media for Teaching in Practice Of Nursing. Sneha Publication India (Dombivili)

- [2] WHO (World Health Organization); 2002. The World Health Report: Reducing Risks, Promoting Healthy Life. Geneva: World Health Organization.
- [3] Popkin B.M; "The shift in stages of the nutritional transition in the developing world differs from past experiences", Public Health Nutrition.2002. Vol 5.No. (1A), p 205-214
<http://www.ncbi.nlm.nih.gov/pubmed/12027286>
- [4] <http://www.who.int/topics/obesity/en/>
- [5] SHINDE, M., & ANJUM, S. (2007). Introduction to Research In Nursing. Sneha Publication India(Dombivili).
- [6] Kadam, A., & Shinde, M. B. (2014). Effectiveness of Structured Education on Caregiver's Knowledge and Attitude Regarding Colostomy Care. *International Journal of Science and Research (IJSR)*, 3(4), 586-593.
- [7] Anjum, S., Durgawale, P. M., & Shinde, M. (2014). Epidemiological Correlates of Use of Contraceptives Methods and Appraisal of Health Education on Status of Knowledge and Practices among Married Woman. *International Journal of Science and Research (IJSR)*, 3(2), 203-210.
- [8] Anjum, S., Durgawale, P. M., & Shinde, M. (2014). Knowledge of Contraceptives Methods and Appraisal of Health Education among Married Woman. *International Journal of Science and Research (IJSR)*, 3(3), 584-590.
- [9] Babu, R. L., Mali, N., & Shinde, M. (2014). Effectiveness of Planned Teaching Programme on Knowledge Regarding Non-Curative Care of Terminally ILL Cancer Patients among Care Takers. *International Journal of Science and Research (IJSR)*, 3(4), 198-205.
- [10] Shinde, M., & Anjum, S. (2014). Effectiveness of Demonstration Regarding Feeding of Hemiplegia Patient among Caregivers. *International Journal of Science and Research (IJSR)*, 3(3), 19-27.
- [11] Deshmukh, M., & Shinde, M. (2014). Impact of Structured Education on Knowledge and Practice Regarding Venous Access Device Care among Nurses. *International Journal of Science and Research (IJSR)*, 3(5), 895-901.
- [12] Bhudhagaonkar, J., & Shinde, M. (2014). Impact of Structured Education Regarding Menstrual Hygiene Practices among Adolescent Girls. *International Journal of Science and Research (IJSR)*, 3(5), 244-252.
- [13] Gupta and Kochar; Dietary and Socio-Economic Factors Associated With Obesity in North Indian Population. The Internet Journal of Health. 2009. Vol 9. No 1. <http://archive.ispub.com/journal/the-internet-journal-of-health/volume-9-number-1/dietary-and-socio-economic-factors-associated-with-obesity-in-north-indian-population.html>
- [14] Flier J.S; "Obesity wars: Molecular progress confronts an expanding epidemic".2004. Vol 116 No. 2. P 337-50. <http://www.ncbi.nlm.nih.gov/pubmed/14744442>
- [15] Vella A.C and Kravitz; Fat Metabolism and Gender differences.2008. p 1-8
<http://www.unm.edu/~lkravitz/Article%20folder/genderdifferences.html>
- [16] Kumar.V, Abbas A. & Fausto N. Pathologic basis of disease. 2005. 7th edition. Philadelphia; El Sevier. p. 464
- [17] Odom; Overweight and Obesity In Women: A Literature Review. 2006. p 33-36

- [18] Blaak, E; Gender differences in fat metabolism. Current Opinion in Clinical Nutrition & Metabolic Care. 2001. Vol 4. p 499-502
- [19] Aggarwal and Mishra; Covariates of Obesity and Overweight among women in North India: East West Center Working Papers – Population and Health Series. No.116, January 2004
- [20] Agrawal; High trans fatty acid content in common Indian fast foods; Nutrition & Food Science. Vol 38. No 6. P 564 -569
- [21] Harrison et.al; “Consumers’ estimation of calorie content at fast food restaurants: cross sectional observational study”
- [22] Kahn E .B. et.al; The Effectiveness of Interventions to Increase Physical Activity: A Systematic Review; American Journal of Preventive Medicine, Vol 22, No 4S, p 76
- [23] Santhi M.D, Kokilavani; A Study To Assess The Effectiveness Of Video Teaching Programme On Physical Care Of Newborn Among Primigravida Mothers Admitted In Urban Health Maternity Centres, Coimbatore, Tamilnadu; Reviews Of Progress - ISSN:- 2321-3485 Original Article; June 19 2013; Vol - 1, No.8

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