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Assessment of Nutritional Status of Female Home Care Nurses (20-35 Years) From a Select Health Care Facility and the Conduct of a Nutrition Education Programme

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Abstract: *This study assessed the nutritional status of female home care nurses and evaluated the effectiveness of a structured nutrition education intervention. A cross-sectional design was adopted among 100 participants aged 20–35 years from selected healthcare services. Data were collected using standardized anthropometric measurements, blood pressure dietary assessment methods, and pre-test and post-test questionnaire. Nutritional status was determined using Body Mass Index (BMI) classification. The results revealed a diverse distribution of participants across BMI categories, indicating the presence of underweight, normal weight, overweight, and obese individuals. Unhealthy dietary behaviors, including meal skipping and frequent consumption of energy-dense foods, were commonly reported. Following the intervention, a significant improvement in participants' nutritional knowledge and dietary practices was observed. The study concludes that targeted nutrition education interventions are effective in improving dietary behaviors and highlights the need for continuous nutrition awareness programs among healthcare professionals.*

Keywords: *Nutritional status, BMI, Home care nurses, Nutrition education, Dietary practices.*

I. INTRODUCTION

Nutritional status is a key determinant of overall health, influencing physical performance, cognitive function, immune response, and work efficiency. Among healthcare professionals, particularly nurses, maintaining optimal nutrition is essential due to the physically demanding and psychologically stressful nature of their work. Irregular meal patterns, inadequate dietary intake, and occupational stress can negatively impact both their health and quality of patient care. Studies indicate that job-related stress significantly affects nurses' well-being and professional performance, emphasizing the need to address nutritional and lifestyle factors [1].

Assessment of nutritional status is important for identifying health risks and evaluating overall well-being. Anthropometric measures such as Body Mass Index (BMI) and waist circumference, along with dietary and clinical assessments, provide valuable insights into conditions like obesity and hypertension. In addition, lifestyle factors such as sleep quality and stress levels significantly influence health outcomes. Poor sleep and high stress are associated with unhealthy eating behaviors, fatigue, and reduced work efficiency among nurses [7],[2].

Shift work is a major factor affecting dietary habits among nurses. Those working night or rotational shifts often experience irregular eating patterns, frequent snacking, and increased consumption of high-calorie foods. These behaviors disrupt metabolic processes and increase the risk of obesity and related disorders. Studies show that shift workers are more likely to skip meals and consume energy-dense foods, while altered meal timing affects circadian rhythms and metabolic health [12],[3].

Unhealthy dietary practices among nurses are strongly linked to adverse health outcomes, including weight gain, metabolic disorders, and increased stress levels. Research has demonstrated a significant association between poor dietary habits and elevated triglycerides and anxiety. Workplace barriers such as lack of time and limited access to healthy food options further contribute to poor eating behaviours [10],[15]. Occupational stress, poor sleep, and physical inactivity further increase the risk of chronic diseases among nurses. Evidence suggests that many nurses do not meet recommended physical activity levels and experience high stress, leading to unhealthy coping behaviors such as emotional eating [11]. These factors are interrelated and create a cycle that negatively affects both physical and mental health [14].

These combined factors increase the risk of non-communicable diseases such as obesity, hypertension, cardiovascular diseases, and diabetes mellitus among nurses. Therefore, assessing nutritional status and associated lifestyle factors is essential to identify health risks and develop targeted interventions. The present study aims to assess the nutritional status of female home care nurses and evaluate the influence of dietary habits, sleep, and stress, thereby contributing to improved health outcomes and quality of care.

II. REVIEW OF LITERATURE

A. Nutritional Status and Health among Nurses

Nutritional status plays an important role in maintaining the overall health and work efficiency of nurses. Adequate intake of essential nutrients such as vitamins and minerals supports immune function, energy levels, and metabolic processes. Deficiencies, particularly in micronutrients like iron, can lead to fatigue, reduced productivity, and increased susceptibility to infections. Maintaining proper nutrition is therefore essential for nurses to perform their duties effectively and sustain their physical and mental well-being [14].

B. Nutritional Requirements for Indian Women

The recommended dietary allowance for Indian Women who are Sedentary Workers is presented in table 1.

TABLE 1
RECOMMENDED DIETARY ALLOWANCE FOR INDIAN WOMEN

Nutrients	RDA (per day)
Energy (kcal)	1660
Protein (g)	46.0
Fat (g)	20
Calcium (mg)	1000
Iron (mg)	29
Vitamin A (mg)	840
Thiamine (mg)	1.4
Riboflavin (mg)	1.9
Vitamin B6 (mg)	1.9
Niacin (mg)	11
Vitamin C (mg)	65
Folate (µg)	220
Vitamin B12 (µg)	2.2
Zinc (mg)	13.2
Magnesium (mg)	370

(ICMR and NIN 2020)

C. Shift Work and Dietary Habits

Shift work significantly influences eating patterns and dietary behaviors among nurses. Those working night or rotational shifts often experience irregular meal timings, frequent snacking, and increased intake of high-calorie foods. Studies have shown that shift workers are more likely to skip meals and consume unhealthy diets compared to day workers, leading to poor diet quality and weight gain. Additionally, eating during night hours disrupts the body’s circadian rhythm and affects metabolic processes [12],[13],[3].

D. Occupational Stress and Eating Behaviour

Occupational stress is a major factor affecting dietary habits and overall health among nurses. Chronic stress leads to hormonal changes, particularly increased cortisol levels, which can increase appetite and preference for high-fat and high-sugar foods. This contributes to emotional eating, weight gain, and metabolic disturbances. Research also indicates that higher stress levels negatively affect quality of life and professional performance among nurses [1].

E. Sleep, Stress and Dietary Interactions

Sleep disturbances are common among nurses due to irregular work schedules and night shifts. Poor sleep quality affects appetite regulation and leads to increased consumption of calorie-dense foods. Studies have shown that nurses with inadequate sleep tend to have poorer dietary habits, including reduced intake of fruits and vegetables. The interaction between stress, sleep, and diet creates a cycle that negatively impacts both physical and mental health [7],[2].

F. Physical Activity and Health Risks

Physical inactivity is another important factor contributing to poor health among nurses. Many nurses do not meet the recommended levels of physical activity due to long working hours and fatigue. This lack of activity increases the risk of cardiovascular diseases, obesity, and metabolic disorders. When combined with poor dietary habits and stress, it further worsens overall health outcomes [11].

G. Non-Communicable Disease Risk among Nurses

Unhealthy dietary habits, stress, and physical inactivity contribute significantly to the development of non-communicable diseases among nurses.

Research indicates a higher prevalence of obesity, hypertension, and metabolic disorders among nurses, particularly those engaged in shift work. Disruptions in circadian rhythm and unhealthy eating patterns further increase the risk of long-term health complications [5],[6].

H. Emotional Eating and Lifestyle Factors

Emotional eating is commonly observed among nurses experiencing high levels of stress and burnout. Under stressful conditions, nurses tend to consume high-calorie comfort foods, which contributes to weight gain and metabolic risk. This behavior highlights the strong relationship between psychological factors and dietary habits, emphasizing the need for interventions addressing both mental health and nutrition [8].

III. METHODOLOGY

This study evaluates the nutritional status of female home care nurses aged 20–35 years working in selected health care services in South Chennai and examines the impact of a structured Nutrition Education Programme tailored to their occupational and dietary needs.

A descriptive research design with an evaluative approach was adopted. The study aims to assess the baseline nutritional status, dietary patterns, and level of nutritional awareness among the participants, followed by evaluating the effectiveness of an intervention program designed to improve their knowledge and dietary practices.

A total of 100 female home care nurses were selected for the study using purposive sampling technique, based on predefined inclusion criteria such as age, shift work involvement, and willingness to participate in the study.

Prior to data collection, informed consent was obtained from all participants, ensuring confidentiality and voluntary participation.

Data were collected using a structured tool which included socio-demographic details, dietary pattern assessment, 24-hour dietary recall, and anthropometric measurements such as height, weight, and Body Mass Index (BMI). A pre-test was administered to assess the existing knowledge regarding nutrition, balanced diet, and healthy eating practices among the participants.

Following the pre-test, a structured Nutrition Education Programme was implemented using appropriate teaching aids such as charts, posters, and interactive sessions. The programme focused on the importance of balanced nutrition, meal planning during shift work, prevention of nutritional deficiencies, healthy food choices, and lifestyle modification strategies suitable for working nurses.

After the intervention, a post-test was conducted to evaluate the improvement in nutritional knowledge and dietary practices among the participants. The effectiveness of the Nutrition Education Programme was assessed by comparing pre-test and post-test scores.

For data analysis, both descriptive and inferential statistical methods were used. Frequency, percentage, mean, and standard deviation were used to summarize the data, while paired t-test was applied to determine the effectiveness of the Nutrition Education Programme.

The findings of the study are expected to provide useful insights into the nutritional status of home care nurses and support the development of effective health promotion strategies to improve their dietary behavior and overall well-being.

IV. RESULTS

Descriptive and Inferential statistical results are presented in the following tables:

A. Descriptive results

**TABLE II
SOCIO-DEMOGRAPHIC PROFILE OF THE PARTICIPANTS**

S.No	Sample size	Variables	Findings	Interpretation
1.	N = 100	Age	Mean age : 28.33 + 4.51 (years) (Range : 20 – 35 years)	Young Adults
2.		Years of Experience	62% Juniors(0-2 years) 38% Seniors (3-8 years)	Predominantly less experienced workforce
3.		Marital Status	63% Single 37% Married	Predominantly single group
4.		Genetic Predisposition of Disease Conditions	37.6% Diabetes mellitus 21.8% Hypertension 20.2% Coronary heart disease 0.6% Asthma	Higher genetic predisposition for diabetes
5.		Personal Medical History	No illness	Disease-free participants

**TABLE III
HABITS OF THE PARTICIPANTS**

S.No	Sample size	Variables	Findings	Interpretation
1.	N = 100	Sleep Pattern	45% sleep between 10.00 - 10.59 PM 55% sleep between 11 - 11:59 PM	Predominant sleep pattern around 11:00-11:59 PM
2.		Wake-up Time	31% 5.00 - 5.30 AM 69% 6.00 - 6.30 AM	The dominant wake-up time is 6.00 - 6.30 AM
3.		Overall Sleep Quality	82% Good sleep quality ≤5 18% Poor sleep quality >5	Satisfactory sleep
4.		Physical Activity	55% Daily 44% 1-2 times per weeks 1% Rarely	Moderate activity
5.		Duration of Screen Time	60% <1 hour 40% 1-3 hours	Short duration

**TABLE IV
MENSTRUAL HEALTH AND SYMPTOMS**

S.No	Sample size	Variables	Findings	Interpretation
1.	N = 100	Menstrual Status	100% Pre-menopause	All participants pre-menopausal
2.		Regularity of Menstrual Cycle	17% Very regular 83% Mostly regular	High prevalence of regular cycles
3.		Length of Menstrual Cycle	17% 1-2 days 81% 3-4 days 2% 5-6 days	Majority have 3-4 day cycles
4.		Menstrual Symptoms	85% Cramps 5% Mood swings 10% Breast tenderness	High occurrence of menstrual cramps
5.		Knowledge on Nutrition Affecting Menstruation	23% Yes 32% No 45% Not sure	Limited knowledge on nutrition effects

TABLE V
DIETARY PATTERNS OF THE PARTICIPANTS

S.No	Sample size	Variables	Findings	Interpretation
1.	N = 100	Dominant Dietary Pattern	4% Vegetarian 93% Non-Vegetarian 3% Lacto-Vegetarian	Predominantly non-vegetarian diet
2.		Skipping Meals	76% Yes 24% No	High meal skipping prevalence
3.		Type of Meal Skipped	75% Breakfast 24% Lunch 1% Dinner	Majority skip breakfast
4.		Frequency of Skipping	76% Everyday 5% Twice a week 19% Thrice a week	Daily meal skipping predominant
5.		Frequency of Eating Outside	1% Everyday 91% Once or twice a week 2% Thrice a week 6% Occasionally	Mostly weekly outside eating
6.		Water Consumption	2% 1-2 glasses 77% 4-6 glasses 21% 6-8 glasses	Moderate hydration levels

TABLE VI
FOODS CONSUMPTION PATTERN SUMMARY

S.No	Sample size	Food Groups	Frequent intake	Occasional intake	Rare / Never consumed	Interpretation
1.	N = 100	Cereals	99% Parboiled rice	Wheat, semolina, vermicelli	43-56% Millets (kambu, foxtail, barnyard)	Low cereal diversity
2.		Pulses	99% Red gram, 70% Bengal gram	Green gram, lentil, peas, soybean	Cowpea (low use)	Limited pulse variety
3.		Green Leafy Vegetables	100% Coriander, curry leaves	Drumstick leaves, cabbage	Spinach, paruppu keerai	Low leafy vegetable intake
4.		Roots and Tubers	99% Onion	Carrot, potato, beetroot	Tapioca, radish	Limited root diversity
5.		Other Vegetables	-	Brinjal, beans, ladies finger, drumstick, cucumber	Bitter gourd, bottle gourd	Low vegetable intake
6.		Fruits	-	Banana, guava, apple, orange, papaya	Custard apple, jackfruit	Low fruit consumption
7.		Flesh Foods	54% Chicken (weekly), 41% egg	Fish, prawn, crab	99% Pork	Moderate animal intake
8.		Milk Products	94% Milk	Curd, buttermilk, butter	Cottage cheese	Milk predominant
9.		Nuts and Oils	80% Coconut, 90% Sunflower oil	Groundnut, cashew, almonds	Safflower oil, gingelly seeds	High oil, low nuts
10.		Sugars and Beverages	87% Tea 90% coffee	Jaggery, honey, sugarcane	-	High beverage intake
11.		Snacks	65% Samosa	Vadai, baji, bonda, sundal	Cutlet, puffed rice	Frequent snack intake

B. Inferential Statistical Analysis

TABLE VII
OVERALL ASSESSMENT OF ANTHROPOMETRIC AND BLOOD PRESSURE PARAMETERS

S.No	Sample size	Parameter	Recommended Value	Mean ± S.D.	Interpretation
1.	N= 100	Body Mass Index (kg/m ²)	18.5–22.9 kg/m ²	23.39 ± 2.86	Slightly overweight
2.		Waist Circumference (cms)	< 80 cm	80.09 ± 7.221	Central obesity risk
3.		Systolic Blood Pressure	< 120	120.53 ± 9.71	Borderline high
4.		Diastolic Blood Pressure	< 80	80.12 ± 5.77	Borderline high

TABLE VIII
COMPARISON OF THE MEAN NUTRIENT INTAKE OF THE PARTICIPANTS WITH THE RDA

S.No	Sample size	Nutrient Intake	RDA	Mean ± S.D.	Interpretation
1.	N= 100	Energy (kcal)	1660	2127.43 ± 336.85	Excess energy intake
2.		Protein (g)	46.0	58.55 ± 8.57	Adequate protein intake
3.		Fat (g)	20	74.12 ± 11.65	Excess fat intake
4.		Calcium (mg)	1000	422.36 ± 28.13	Low calcium intake
5.		Iron (mg)	29	13.92 ± 3.31	Low iron intake

TABLE IX
COMPARISON OF PRE-TEST AND POST-TEST KNOWLEDGE SCORE

S.No	Sample size	Test	Mean Score ± S.D	't' Value	Level of Significance	Interpretation
1.	N=100	Pre-Test	6.85 ± 1.654	41.53	p <0.001	Poor knowledge
2.		Post-Test	16.16 ± 1.768			Improved knowledge

TABLE X
CORRELATION ANALYSIS

S.No	Sample size	Correlation	'r' Value	't' Value	Level of Significance	Interpretation
1.	N=100	Mean body mass index (kg/m ²)	+0.983	52.9	p <0.001	Very strong positive correlation
2.		Mean waist Circumference (cms)				
3.		Mean body mass index (kg/m ²)	+0.964	35.9	p <0.001	Very strong positive correlation
4.		Mean systolic pressure (mmHg)				
5.		Mean body mass index (kg/m ²)	+0.880	18.34	p <0.001	Strong positive correlation
6.		Mean Diastolic pressure (mmHg)				
7.		Mean energy intake	+0.691	9.46	p <0.001	Moderate positive correlation
8.		Mean body mass index (kg/m ²)				

V. DISCUSSION

The study revealed that a significant proportion of female home care nurses were in the overweight and obese categories based on BMI, indicating increased risk of metabolic disorders. Waist circumference values were also elevated among many participants, and the strong positive correlation between BMI and waist circumference suggests the presence of central obesity. The findings indicate that shift work plays a major role in weight gain due to irregular meal timing, altered metabolism, and hormonal imbalance. Dietary patterns showed a high reliance on refined cereals such as polished rice, with low consumption of millets and whole grains, reflecting poor dietary diversity. Intake of protective foods such as fruits, green leafy vegetables, and other vegetables was inadequate, which may lead to micronutrient deficiencies. Frequent consumption of fried foods, snacks, and convenience foods was observed, especially during night shifts due to lack of time and limited availability of healthy food options. Physical activity levels were found to be low to moderate among participants, mainly due to work fatigue and busy schedules, contributing to weight gain and poor health. Sleep patterns were disturbed among many participants, with irregular sleep duration and poor sleep quality, which can negatively affect metabolic health and increase the risk of obesity. Increased screen time and sedentary behavior further contributed to an unhealthy lifestyle pattern among the study group. A considerable proportion of participants had a family history of diabetes, hypertension, and heart disease, indicating genetic predisposition to chronic conditions. The combination of genetic risk factors with poor dietary habits and unhealthy lifestyle practices increases the likelihood of developing non-communicable diseases at an early age. The nutrition education program conducted during the study improved participants' knowledge regarding balanced diet, portion control, and healthy eating practices. Although immediate behavioral changes may be limited, increased awareness can lead to gradual improvement in lifestyle habits over time. The study highlights the need for workplace interventions such as nutrition awareness programs, availability of healthy food options, and promotion of physical activity among nurses. Overall, the findings conclude that female home care nurses working in shift systems are at higher risk of poor nutritional status and metabolic health issues, and targeted interventions are essential to improve their health outcomes.

VI. CONCLUSION

The present study clearly demonstrates that female home care nurses working in shift systems are at a significantly higher risk of poor nutritional status, overweight, and metabolic health disorders. This increased risk can be attributed to a combination of factors such as irregular dietary habits, frequent consumption of refined and convenience foods, inadequate intake of essential nutrients, low levels of physical activity, and disturbed sleep patterns associated with shift work. These occupational and lifestyle-related challenges disrupt normal metabolic functioning and contribute to the development of obesity and other non-communicable diseases. Furthermore, the presence of a family history of conditions such as diabetes, hypertension, and cardiovascular diseases indicates an underlying genetic predisposition, which further elevates their vulnerability when combined with unhealthy behaviors. The nutrition education program implemented as part of this study proved to be effective in enhancing the knowledge and awareness of participants regarding balanced diets, appropriate meal timing, portion control, and the importance of incorporating nutrient-rich foods into their daily routine. This improvement in awareness highlights the potential of educational interventions as a practical and cost-effective approach to promoting healthier lifestyles among healthcare workers. However, it is important to recognize that knowledge alone may not lead to immediate behavioral change, especially in the presence of occupational constraints such as long working hours, night shifts, and limited access to healthy food options. Therefore, sustained efforts, continuous reinforcement, and supportive workplace environments are essential to ensure the successful translation of knowledge into long-term healthy practices. Overall, the findings of this study emphasize the need for a comprehensive and integrated approach to improving the health and well-being of home care nurses. This includes regular nutrition education programmes, promotion of physical activity, stress management strategies, and organizational support in the form of healthy food availability and better work scheduling. Such multi-level interventions can significantly reduce health risks and improve quality of life. Future research should focus on long-term follow-up studies to assess the sustainability of behavioral changes, inclusion of biochemical parameters for more accurate health assessment, and evaluation of intervention effectiveness over time. This will help in developing more targeted and evidence-based strategies to address the nutritional and health challenges faced by shift-working healthcare professionals.

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