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Relationship between Nutritional Status and Socioeconomic Status among Preschoolers

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Abstract

Background: Nutrition is the foundation to ensure good health. Optimum nutrition is an integral component of paediatric health care[1]. Good nutrition is essential to good health throughout life, beginning with parental life and extending through old age[2]. The nutritional status is influenced by a complex interaction between internal or constitutional factors and external environmental factors. Internal or constitutional factors may be age, gender, nutrition, behaviour, physical activity and disease whereas external environmental factors may be food safety, cultural and socioeconomic factors[3].

Materials and Methods: This study was conducted to assess the relationship between nutritional status and socioeconomic status among preschoolers of selected Anganwadis at Varkala Municipality. Quantitative correlational research design was adopted for the study. Two hundred and fifty preschoolers were selected using convenience sampling technique. Data collection tool was structured questionnaire to collect sociodemographic variables, Modified kuppuswamy socioeconomic scale to assess socioeconomic status. Nutritional status was assessed based on weight for age, height for age and mid arm circumference.

Results: The relationship between nutritional status and socioeconomic status was computed by using correlation coefficient, there was a significant correlation found between nutritional status based on weight for age with socioeconomic status ($r = 0.150$, $p<0.05$), on the basis of height for age there was a negative correlation found with socioeconomic status and based on mid arm circumference there was no correlation found with socioeconomic status. The chi-square value showed that there was significant association found between nutritional status based on weight for age and mother's age, birth weight ($p<0.05$), history of recurrent infections ($p<0.001$), on the basis of height for age association was found with child's age, area of residence ($p<0.01$), and type of family ($p< 0.05$) and with regard to Mid arm circumference association was found with age of child ($p<0.001$) and religion ($p<0.05$).

Conclusion: There is a relationship between nutritional status and socioeconomic status based on weight for age.

Key words: Nutritional status; socioeconomic status; Preschoolers

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Introduction

Anthropometry is the single most universally applicable non-invasive and inexpensive technique for nutritional assessment. The aim of the study was to assess the relationship between nutritional status and socioeconomic status among preschoolers. The objectives of the study were to assess the nutritional status of preschoolers, assess the socioeconomic status of preschoolers, find the relationship between nutritional status and socioeconomic status among preschoolers of selected Anganwadis at Varkala Municipality and Find out the association between nutritional status and sociodemographic variables. The World Health Organization (2022) estimates that malnutrition accounts for 54% child mortality worldwide, which is about 1 million children. In 2020, globally, 149.2 million children under the age of 5 years were stunted, 45.4 million wasted and 38.9 million were overweight[4]. As per the GLOBAL HUNGER INDEX and the National Family Health Survey (2019–2021) 7.7% under five children are severely wasted, 35.5% are stunted and 19.3% are wasted in India. Comprehensive National Nutrition Survey (2017-18) among children of under five years of age in Kerala reported that 20.55% are stunted or have low height for age, 12.65% are wasted or have low weight for height and 18.75% are underweight or have low weight for age. About 3.2% of total children in this age group are severely underweight[5]. Socioeconomic status determines nutritional status through four factors namely parenting patterns, availability and accessibility of food, access to health services, and environmental sanitation and hygiene. All of these factors can affect children's health and shape their nutritional status. The fulfilment of socioeconomic status is determined by three main factors, namely the parents' education level, the parents' occupational status, and family expenditure level[6].

Material and Methods

Quantitative research approach with correlational research design was adopted for this study. Two hundred and fifty preschoolers were selected by using convenience sampling technique. Data was collected from the mothers of preschoolers attended at selected anganwadis at Varkala Municipality after obtaining formal permission from District Officer Women and Child Welfare Thiruvananthapuram in 2023.Ethical clearance taken from institutional ethics committee of Sivagiri Sree Narayana Medical Mission College of Nursing Varkala on 28/11/2022 (IEC NO: SCN/158/22-23).

Study Design: Correlational research design

Study Location: Selected anganwadis at Varkala Municipality

Study Duration: 1st April 2023 to 30th April 2023.

Sample Size Calculation: Sample size was calculated by the following formula.

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} * p * q}{d^2}$$

Where

d=Absolute precision

p=Expected proportion

α=Level of significance

Calculation

α=0.05

$$Z_{1-\frac{\alpha}{2}} = 1.96$$

d=5%

p=0.1954

Sample size consists of 242 preschoolers

Anticipating loss to follow up and missing of data, the minimum sample size is rounded to be 250.

Subject and selection methods: Data was collected from mothers of preschoolers in selected anganwadis. Sampling technique adopted in the present study was convenience sampling.

Inclusion Criteria:

1. Preschoolers attending in selected anganwadis at Varkala Municipality

Exclusion criteria:

1. Children under the age of three and over the age of six

Procedure Methodology:

Questionnaire was given to obtain information about socio demographic characteristics, Modified kuppuswamy socioeconomic scale was used to identify socioeconomic status. Nutritional status of the preschoolers was assessed by measuring weight, height mid arm circumference of the children. Weight of the children was assessed by using weighing machine, a stadiometer was used to check the height, Shakir tape was used to assess mid upper arm circumference

Statistical analysis

Relationship between nutritional status and socioeconomic status was assessed by using correlation coefficient. Chi-square was used to assess the association between nutritional status and socio demographic variables.

Results

A. Socio demographic Data of the subjects

About 56.4% were within the age group of > 4years, 57.2% of preschoolers were males, 66.0% were Hindus and 63.2% of preschoolers reside in rural areas.Based on type of family 64.8% of preschoolers were from nuclear families, 63.2% of mothers of preschoolers were within the age group of 20-30 years, 67.2% of fathers of preschoolers were within the age group of 31-40 years and with regard to number of siblings of preschoolers, 58% had one sibling.

On the basis of spacing and birth order 38.8% had birth spacing more than 3 years and 56.0% of preschoolers were of second birth respectively, all the preschoolers were immunized up to the age and 97.2% of preschoolers had birth weight above 2.5 kg. With regard to breast feeding after birth all the preschoolers were breast fed, 94.4% of preschoolers were exclusively breast fed up to the age of 6 months and 94.4% of preschoolers were exclusively breast fed up to the age of 6 months, Based on total duration of breast feeding 76.8% of preschoolers were breast fed more than 2 years, 94.4% of preschoolers weaning started at 6 months and 95.6% of preschoolers had no history of recurrent infections.

B. Socioeconomic status and Nutritional status of preschoolers

About 64.8% of preschoolers belong to upper lower socioeconomic class, 25.2% belong to lower middle socioeconomic class and 10% belong to upper middle socioeconomic class and nutritional status of preschoolers based on weight for age, 51.6% had normal weight for age, 47.6% had grade I malnutrition, and 0.8% had grade II malnutrition. Nutritional status of preschoolers based on height for age showed that 84% had normal height for age, 13.2% had mild retardation, and 2.8% had moderate retardation. Nutritional status of preschoolers based on mid arm circumference showed that 92.8% had normal mid arm circumference and 7.2% had moderate malnutrition.

Modified kuppuswamy socioeconomic scale was used to assess the socioeconomic status. It include education of the head of the family, occupation of the head of the family, monthly income of family and each parameter has different scores. Based on the total score the socioeconomic class is defined. The scoring is:

SL. NO	SCORE	SOCIOECONOMIC CLASS
1	26-29	Upper(I)
2	16-25	Upper middle(II)
3	11-15	Lower middle(III)
4	5-10	Upper lower(IV)
5	<5	Lower(V)

C. Relationship between nutritional status and socioeconomic status of preschoolers

Nutritional status	**Socioeconomic status**			
Weight for age	**upper lower**	**lower middle**	**upper middle**	**r**
Normal	76	34	19	
Grade I malnutrition	85	28	6	0.150*
Grade II malnutrition	1	1	0	

Continue.....

Height for age				
Mild retardation	21	7	1	
Moderate retardation	7	1	0	-0.109
Normal	134	55	24	
Mid arm circumference				
Moderate malnutrition	12	2	0	
Normal	150	61	25	0.112

The parameters are:

1. Weight for age calculated by using Gomez classification

>90% = Normal nutritional status

76-90%= 1st degree malnutrition

61-75% = 2nd degree malnutrition

≤ 60% = 3rd degree malnutrition

2. Height for age calculated by Waterlow's classification

< 85% expected height for age: severe retardation

85-90% expected height for age: Moderate retardation

90-95% expected height for age: Mild retardation

>95% expected height for age: Normal

3. Mid arm circumference classification on the basis of WHO classification

Above 13.5 cm = Normal

12.5-13.5 cm = Moderate malnutrition

Below 12.5 cm = Severe malnutrition

D. Association between nutritional status and socio demographic variables

The chi-square value showed that there was significant association found between nutritional status based on weight for age and mother's age, birth weight ($p<0.05$), history of recurrent infections ($p<0.001$), on the basis of height for age association was found with child's age, area of residence ($p<0.01$), and type of family ($p< 0.05$) and with regard to Midarm circumference association was found with age of child ($p<0.001$) and religion ($p<0.05$).

Discussion

The first objective of the study was to assess the nutritional status of preschoolers. The result showed nutritional status of preschoolers based on weight for age, 51.6% had normal weight for age, 47.6% had grade I malnutrition, and 0.8% had grade II malnutrition. Nutritional status of preschoolers based on height for age showed that 84% had normal height for age, 13.2% had mild retardation, and 2.8% had moderate retardation. Nutritional status of preschoolers based on mid arm circumference showed that 92.8% had normal mid arm circumference and 7.2% had moderate malnutrition.

The above findings are supported by the study conducted by Anis Ahmad and Sazia Muzammil on assessment for nutritional status among preschool children in south Delhi, India. The study was conducted among 100 children of 24-47 months of age. Anthropometric measurements of weight and height were measured. The study results showed that 51%, 36%, 11% and 2% children were found to be in the ranges of normal weight, grade I, grade II, and severely underweight respectively by Indian Academy of pediatric classification respectively. The study concluded that the most extensively used markers of nutritional quality in a population are anthropometric measures[7].

The second objective of the study was to assess the socioeconomic status of preschoolers.Theresults showed that 64.8% of preschoolers belong to upper lower socioeconomic class, 25.2% belong to lower middle socioeconomic class and 10% belong to upper middle socioeconomic class.

The above findings were supported by a study on Socioeconomic Status and its Influence on Nutrition and Cognitive Performance in Children between the age group of 5-15 years old in Tamilnadu. The

study was undertaken to assess various nutritional parameters and their influence on cognitive performance. The aim of this study was to correlate the cognitive performance of children with the parental socioeconomic status. Sixty children were selected randomly and classified according to modified kuppusamy's scale for socioeconomic status. Anthropometric assessments such as height, weight and BMI were measured. The study results showed that children of higher socioeconomic status had better cognitive skills when compared to the children of lower socioeconomic status. The study concluded that socioeconomic status of parents which includes education, occupation, and income determines the cognition and intelligence[8].

The third objective of the study was to find the relationship between nutritional status and socioeconomic status among preschoolers of selected Anganwadis at Varkala Municipality. Spearman rank correlation coefficient was used to find the relationship between nutritional status and socioeconomic status of preschoolers. The results showed that there was a significant correlation was found between nutritional status based on weight for age with socioeconomic status, on the basis of height for age there is a negative correlation found with socioeconomic status and based on mid arm circumference there is no correlation was found with socioeconomic status.

These findings were supported by a descriptive cross sectional study conducted to determine the correlation between nutritional and socioeconomic status of under five children in Africa among 406 children. Quantitative and qualitative approaches were used in collecting and analysing primary data. Quantitative data was collected through a community household survey. Pearson Chi-square was used to prove the relationship between socioeconomic status and child nutritional status. This study revealed that there was a significant relationship between socioeconomic variables with wasting and underweight[9].

The fourth objective of the study was to find out the association between nutritional status and socio demographic variables. The chi-square test shows that there was statistically significant association between weight for age of preschoolers with mother's age, birth weight and history of recurrent infections. Based on height for age of preschoolers there was a significant association between age of child, area of residence, and type of family and on the basis of mid arm circumference there was statistically significant association between age of child and religion with sociodemographic variables.

These findings were supported by the study conducted by Prakash Sharma on nutritional status and associated factors among preschool children in Nepal. The study was conducted among 389 children of 3-5 years of age. The findings indicated that more than half of the children had below the normal level of nutrition status and nearly half had a low economic background. Low family income for height for age and weight for age, father's occupation for weight for age and BMI for age classification of nutrition status were found to be the most specific determinants of poor nutrition status in preschool children[10].

Nutritional status assessment is the best way to identify malnutrition among children. The future recommendation of the study is only anthropometric measurement was used to assess the nutritional status of preschoolers. Other methods such as biochemical, clinical and dietary methods can also use to identify nutritional status.

Conclusion

Nutritional status assessment is the best way to identify malnutrition among children. The following conclusions were drawn based on the findings of the study. Significant correlation was found between nutritional status based on weight for age with socioeconomic status , on the basis of height for age there is a negative correlation was found with socioeconomic status and based on mid arm circumference there is no correlation was found with socioeconomic status. The findings of this study will help the nurses to plan for assessment of nutritional status to reduce nutritional deficiency disorders among preschool children. The main weakness of this study is only anthropometric measurement was used to assess the nutritional status of preschoolers. Other methods such as biochemical, clinical and dietary methods can also use to identify nutritional status.

Conflict of Interest: Nil

Source of funding: Self

Ethical Clearance: Taken from institutional ethics committee of Sivagiri Sree Narayana Medical Mission College of Nursing Varkala on 28/11/2022 (IEC NO: SCN/158/22-23).

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Original Research Article

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The Effectiveness of Planned Teaching Programme on Knowledge Regarding Arterial Blood Gas Analysis among Undergraduate Nursing Students in Jhalawar District

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Abstract

An Arterial Blood Gas (ABG) test is a relatively swift and low-risk method that helps healthcare professionals obtain information on oxygen saturation, acid-base balance, partial pressure of oxygen, partial pressure of carbon dioxide, metabolic parameters, and arterial oxygen saturation[1]

Objectives

1. To assess the existing knowledge regarding Arterial Blood Gas (ABG) analysis among undergraduate nursing students at a selected nursing college.
2. To evaluate the effectiveness of a planned teaching program on Arterial Blood Gas (ABG) analysis among undergraduate nursing students at a selected nursing college.
3. To determine the association between pre-test knowledge scores and selected demographic variables.

Material and Method: A quasi-experimental one-group pre-test post-test design was used. A total of 125 samples were selected using the probability simple random sampling method. A structured questionnaire consisting of 30 items was administered as a pre-test on the first day, followed by planned teaching, and a post-test was conducted on the seventh day. The reliability coefficient (r) of the questionnaire was 0.80, which is greater than 0.7, indicating that it was reliable. The conceptual framework was based on the Adaptation Theory developed by Sr. Callista Roy (1976), incorporating input, processes, effectors, output, and feedback.

Result and Conclusion: In the results of the structured questionnaire, it was found that 29.6% of undergraduate nursing students had poor knowledge, 65.6% had average knowledge, and 4.8% had good knowledge regarding Arterial Blood Gas (ABG) analysis. The post-test knowledge score findings showed an improvement in the knowledge of undergraduate nursing students regarding ABG analysis. After the intervention, 41.6% of undergraduate nursing students had average knowledge, while 54.4% had good knowledge scores regarding ABG analysis. This suggests a marked increase in post-test knowledge scores, indicating that the planned teaching was effective. The chi-square test computed between pre-test knowledge and selected variables showed that knowledge was not dependent on age, gender, qualification, or previous knowledge.

Key words: Planned teaching programme, ABG analysis, Undergraduate nursing student.

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Introduction

Over the last few years, there has been a significant increase in the knowledge, technology, and skills required to treat critically ill patients. This has led to the development of intensive care units (ICUs), which are specialized areas where severely ill patients can be concentrated, monitored, and provided with the infrastructure and expertise necessary for managing critical illnesses. For instance, undergraduate nursing students must possess the necessary knowledge and skills to work in these settings. They must also understand arterial blood gas (ABG) analysis and continually update their knowledge, as it is one of the most commonly used tests to assess a patient's clinical status. Accurate analysis can lead to quicker and more precise adjustments in patient care plans. In many settings, nurses are becoming increasingly autonomous in patient management, including ordering and interpreting diagnostic studies.[2]

Nurses play a crucial role in the early detection of high-risk clients with acid-base imbalances in critical care units. They collaborate in the administration of drug therapy, oxygen therapy, and mechanical ventilation when necessary. In extreme circumstances where therapeutic compensation is required, nurses must be knowledgeable about the potential risks associated with these therapies and be capable of carefully monitoring administration rates and therapeutic responses..[3]

Research Methodology

Research Approach: Quantitative research approach.

Research Design: Quasi-experimental one-group pre-test post-test design.

Variables:

- Independent Variable: Planned teaching program regarding ABG analysis.
- Dependent Variable: Knowledge of undergraduate nursing students regarding ABG analysis**.**

Setting of the Study: Selected nursing colleges in the Jhalawar district.

Population: Undergraduate nursing students.

Sample Size: The sample size for the study consisted of 125 undergraduate nursing students.

Sampling Technique: Probability simple random sampling technique was used.

Reliability: Karl Pearson's correlation coefficient formula was used to estimate reliability. The reliability coefficient (r) of the structured questionnaire was 0.80, which is greater than 0.7, indicating that the questionnaire was reliable.

Pilot Study: The pilot study helped the researcher anticipate potential issues that might arise during the main investigation and provided better insights into the research methodology. No changes were required after the pilot study.

Procedure of Data Collection: Prior permission was obtained from the principal of the nursing college in the Jhalawar district. The researcher visited the college and selected the samples based on the criteria. A 30-minute pre-test was conducted using a structured questionnaire after obtaining informed consent from the participants. A 45-minute structured teaching program was delivered immediately after the pre-test. The 30-minute post-test was conducted 7 days after the structured teaching program.

Results

Table No.1: Frequency and Percentage Distribution of Selected Demographic Characteristics.

n = 125

SR.NO	DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE(%)
1	Gender of individual		
A	Male	92	73.6
B	Female	33	26.4
2	Age		

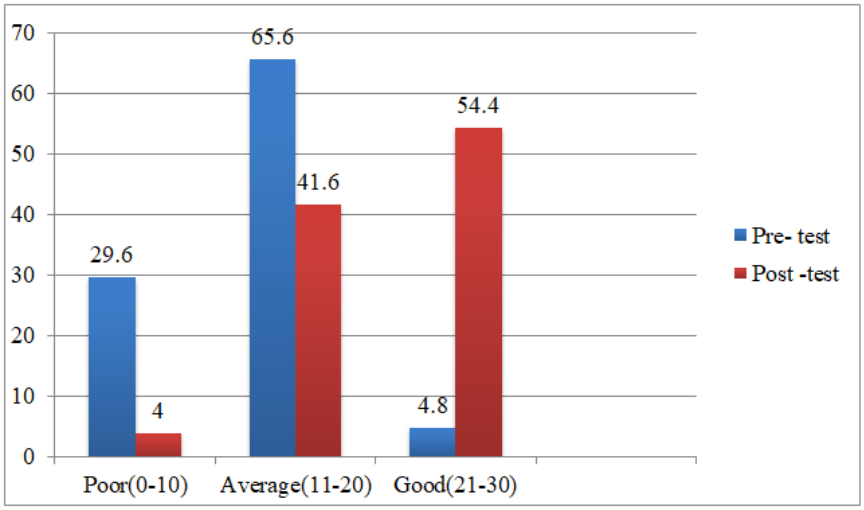
Continue.....

A	17-30 Years	125	100.0
3	Educational qualification		
A	B.Sc. Nursing 1st Year	2	1.6
B	B.Sc. Nursing 2nd Year	83	66.4
C	B.Sc. Nursing 3rd Year	19	15.2
D	B.Sc. Nursing 4th Year	21	16.8
4	Previous knowledge		
A	Yes	73	58.4
B	No	52	41.6

Table No.2: Frequency and Percentage Distribution of Pre-Test and Post Test Knowledge Score.

n = 125

KNOWLEDGE SCORE	PRE TEST		POST TEST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Poor (0-10)	37	29.6	5	4
Average (11-20)	82	65.6	52	41.6
Good (21-30)	6	4.8	68	54.4



Figutre No 1: Frequency and Percentage Distribution of Pre – Test and Post Test Knowledge Score.

Table No.3: Comparison between Pre-Test and Post-Test Knowledge Score.

n = 125

TEST	MEAN	STD. DEVIATION	t value	df	p value
PRE-TEST SCORE	13.5040	4.50201	11.133	124	<0.0001*
POST-TEST SCORE	20.7760	5.55887			

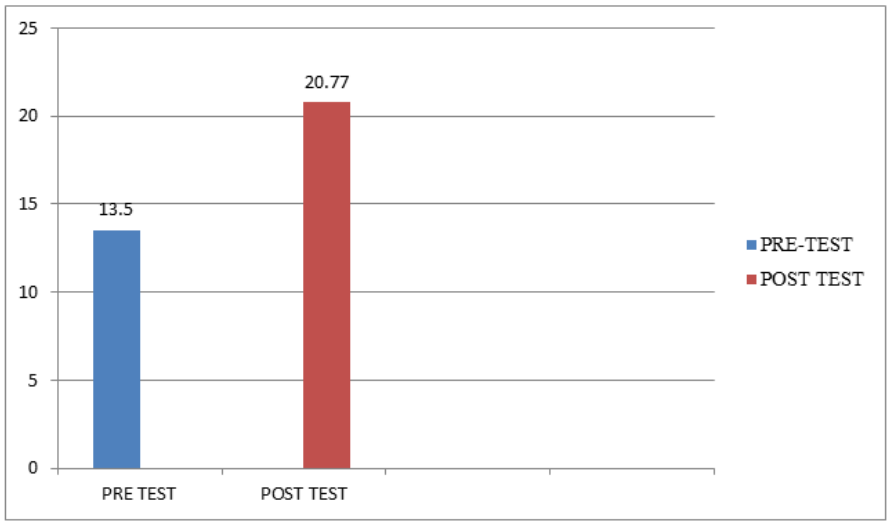


Figure No. 2: Comparison between Pre-Test and Post-Test Knowledge Score.

Table 3 and Figure 2 represent the data showing that the mean value of the pre-test knowledge score is 13.50, while the post-test knowledge score is 20.77. The calculated 't' value is 11.133, which is greater than the tabulated value, and the calculated 'p' value is <0.000, which is less than the tabulated 'p' value (0.05). This indicates a statistically significant increase in post-test knowledge scores, suggesting that the planned teaching program on Arterial Blood Gas (ABG) analysis for undergraduate nursing students was effective..

Table No. 4: Association between Pre-Test Knowledge Score with Demographic Variables.

n = 125

Sr. No	Demographic variables	Pre-test knowledge score			Test Chi square Test	p value	Remark
		Poor	Average	Good			
1	**Sex of individual**						
A	Male	29	60	3	2.162	0.339	No association
B	Female	8	22	3			
2	**Age**						
A	17-30 Years	37	82	6			
3	**Qualification**						
A	B.Sc. Nursing 1st Year	1	1	0	7.568	0.271	No association
B	B.Sc. Nursing 2nd Year	23	57	3			
C	B.Sc. Nursing 3rd Year	5	14	0			
D	B.Sc. Nursing 4th Year	8	10	3			
4	**Previous knowledge received**						
A	Yes	16	51	6	8.259	0.016	No association
B	No	21	31	0			

Discussion

- **Frequency and Percentage Distribution of Selected Demographic Characteristics:**

The majority of the undergraduate nursing students, 92 (73.6%), were male, and 33 (26.4%) were female. All 125 (100%) participants were in the age

group of 17-30 years, indicating that the majority of the sample fell within this age range.

Regarding educational qualifications, 2 (1.6%) undergraduate nursing students were in B.Sc. Nursing 1st year, 83 (66.4%) were in B.Sc. Nursing 2nd year, 19 (15.2%) were in B.Sc. Nursing 3rd year, and 21 (16.8%) were in B.Sc. Nursing 4th year. These findings indicate that most undergraduate nursing students in the study were from B.Sc. Nursing 2nd year.

In terms of prior knowledge, 73 (58.4%) undergraduate nursing students had received information about Arterial Blood Gas (ABG) analysis from workshops, seminars, or presentations, while 52 (41.6%) had not received any information regarding ABG analysis.

- **Frequency and Percentage Distribution of Pre – Test and Post Test Knowledge Score.**

Out of 125 undergraduate nursing students, 37 (29.6%) had poor knowledge in the pre-test, 82 (65.6%) had average knowledge, and 6 (4.8%) had good knowledge. This knowledge improved significantly in the post-test, where 68 (54.4%) undergraduate nursing students had good knowledge regarding Arterial Blood Gas (ABG) analysis, 52 (41.6%) had average knowledge, and only 5 (4%) had poor knowledge.

Similar findings were reported in a study by Anita Kumari (2020), where 72% of staff nurses had average knowledge in the pre-test, and 75% had good knowledge in the post-test regarding arterial blood gas analysis and interpretation. The study concluded that a structured teaching program was effective in enhancing the level of knowledge of staff nurses regarding arterial blood gas analysis and interpretation.

Additionally, a study by Thirumoorthy D (2022)[5] showed that after the administration of an information booklet, 90% of staff nurses had adequate knowledge regarding ABG analysis. These studies highlight the importance of ABG analysis in selected hospitals, signifying that the planned teaching program (PTP) was effective in improving knowledge of arterial blood gas analysis among undergraduate nursing students.

- **Comparison between Pre-Test and Post-Test Knowledge Score.**

The mean value of the pre-test knowledge score was 13.50, and the post-test knowledge score was 20.77. The calculated 't' value was 11.133, which is greater than the tabulated 't' value, and the calculated 'p' value was <0.000, which is less than the tabulated 'p' value (0.05).

Similar findings were reported in a study by Jeril Mariam Thomas (2017)[6], which revealed that the mean post-test knowledge level of the experimental group (24.10) was higher compared to the pre-test score (14.10). This study concluded that the structured teaching program was effective in improving the level of knowledge of II and III-year B.Sc. Nursing students.

Likewise, a study by Supriya Singh (2023)[7] found that the mean and standard deviation of nursing students in the pre-test was 11.783 ± 3.50, while in the post-test, it was 16.266 ± 5.09. The calculated 't' value was 5.09, which was higher than the tabulated value of 2.02 at $p < 0.05$ level of significance. These findings clarify that the self-instructional module was effective in enhancing the knowledge of nursing students regarding arterial blood sampling.

These results suggest a statistically significant increase in post-test knowledge scores, indicating that the planned teaching program on Arterial Blood Gas (ABG) analysis for undergraduate nursing students was effective.

- **Association between Pre-Test Knowledge Score with Demographic Variables.**

There is no significant association between age, gender, qualification, previous knowledge, and pre-test knowledge scores, as the calculated 'p' value is greater than the tabulated 'p' value (0.05). However, there is a significant association between pre-test scores and education level. Those with qualification 'A' demonstrated poor knowledge scores in relation to the selected demographic variables.

Conclusion

The analysis and interpretation of data collected from 125 undergraduate nursing students included the frequency and percentage distribution

of demographic variables. The effectiveness of the planned teaching program was assessed by comparing the mean pre-test and post-test knowledge scores, which demonstrated that the planned teaching was effective. The association between selected demographic variables and knowledge scores was analyzed using the calculated p-value. The results showed a significant association between pre-test scores and education levels, with those having qualification 'A' exhibiting poorer knowledge scores in relation to the selected demographic variables.

Conflict of Interest: - Nil

Source of Funding: - Self –funding

Ethical Considerations: -An ethical committee letter was submitted to Jhalawar Nursing College, Jhalawar, and permission to conduct the research was obtained. Approval was also secured from the concerned authority and the parents of each participant before data collection. The approval was granted under the reference number JNC/2023/1543, dated 06/11/2023.

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Original Article

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Assessment of the Knowledge regarding Ventilator Care Bundle among Final Year BSc. Nursing Students of Mysuru City

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Abstract

Background: Ventilator-associated pneumonia (VAP) is nosocomial pneumonia found in 9–27% of patients on mechanically assisted ventilator and is also a major threat to the recovery of patients receiving mechanical ventilation. It usually occurs within 48 h after tracheal intubation. Preventing VAP is one of the important safety issues in critically ill patients receiving mechanical ventilation. Intensive care nurses are in the best position to put the evidence-based guidelines into practice as they are at the patient's bedside 24 hours a day and therefore, they play an important role in the prevention of VAP. Knowledgeable and skilled nurses are crucial in providing patient care, timely and correct decision minimizes the risks to patient.[1] Prevention and control of ventilator associated pneumonia are dependent on education and awareness of ICU staff towards the problem and on the application of evidence-based strategies

Aim: The aim of the present study was to assess the knowledge regarding ventilator care bundle among Final year BSc. Nursing students of selected nursing colleges at Mysuru city

Design: Descriptive, non-experimental research design

Sample and sampling technique: Convenience sampling technique was adopted to select 60 final year BSc nursing students of selected nursing colleges at Mysuru city. Structured Knowledge questionnaire was used to assess the selected personal variables and to assess the Knowledge regarding ventilator care bundle among final year BSc nursing students

Results: The study findings revealed that Majority 19(75%) of nursing students got information through health personnels, 05(25%) from electronic mass media and study findings also revealed the findings revealed that majority 41(68.4%) B.SC nursing students had average knowledge.

Conclusion: Analysis of findings revealed that majority nursing students 50(83.3%) had average knowledge regarding ventilator care bundle. Hence there is need to conduct educational programme to enhance the knowledge and develop desirable attitude regarding Preventing the ventilator associated pneumonia.

Keywords: VAP: ventilator associated pneumonia, VCB: ventilator care bundle

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Introduction

Mechanical ventilation is an essential medical intervention in the context of critical illness. However, the intervention is associated with a risk of significant, potentially preventable complications.[2]

Ventilator-associated pneumonia (VAP) is a common healthcare-associated infection (HCAI) occurring in 10–20% of patients mechanically ventilated in the ICU.[1,2] It usually occurs within 48 h after tracheal intubation. 86% of nosocomial pneumonia is associated with ventilation.[3] Although the exact attributable mortality has proved difficult to define, it has significant consequences with increased mortality, the length of ICU stay and hospital stay and an increase in healthcare costs.[3–5] Furthermore, within a global setting of worsening antimicrobial resistance, the treatment of respiratory tract infections represents a significant burden of antimicrobials in the ICU. [1,2]

Preventing VAP is one of the important safety issues in critically ill patients receiving mechanical ventilation. The American Association of Critical-Care Nurses (AACN) recommended steps for reducing the incidence of VAP and these steps are based on the best-practice guidelines for patients receiving mechanical ventilation called the "ventilator bundle."

Intensive care nurses are in the best position to put the evidence-based guidelines into practice as they are at the patient's bedside 24 hours a day and therefore, they play an important role in the prevention of VAP.

Many studies reported that incidence of VAP in the VAP care bundle group (0.281 cases per 1000 ventilator days) was significantly lower than that in the control group (0.495 cases per 1000 ventilator days).[5]

Regarding ventilator care bundle Studies also reported that more than half (56.7%) of the staff nurses had excellent knowledge regarding ventilator care bundle and 43.3% of them had good knowledge regarding ventilator care bundle It shows that knowledge and compliance of staff nurses regarding ventilator care bundle were found to have significant association. Knowledgeable and skilled nurses are crucial in providing patient care, timely and correct decision minimizes the risks to patient.[1]

Lack of knowledge about the prevention of infection and proper nursing care may become barrier to prevent VAP. The occurrence of ventilator acquired Pneumonia indicates inadequacy of experienced nurses, insufficient knowledge and understanding about the pathophysiology and prevention of VAP.[2]Student nurses need to have an awareness of the problem as well as knowledge on evidence-based guidelines to improve in the quality of nursing care.

Statement of the Problem

"A Study to assess the knowledge regarding ventilator care bundle among Final year BSc. Nursing students of selected colleges at Mysuru city with a view to conduct an educational Programme."

Objectives

1. To assess the knowledge regarding ventilator care bundle among final year BSc. Nursing students of selected colleges at Mysore city.
2. To find the association between level of knowledge regarding ventilator care bundle among final year BSc. Nursing students and their selected personal variables

Hypotheses

H_1: There will be significant association between the level of knowledge regarding ventilator care bundle among final year nursing students and their selected personal variables.

Research Methodology

This descriptive, non-experimental research study was conducted to assess the knowledge regarding ventilator care bundle among final year nursing students and approved by the institutional ethic committee at JSS Medical College, Mysuru. The study topic was not in the curriculum of nursing students and care bundles were implemented in the tertiary health care settings. The study sample comprised of 60 final year nursing students of Mysuru city. Using convenience sampling technique, 60 final year nursing students were selected from selected Nursing colleges. Structured Knowledge Questionnaire was administered to measure level of knowledge regarding ventilator care bundle. Five medical surgical nursing professionals with over

15 years of experience validated the tool, confirming its reliable. Pilot study was conducted. After the data collection the educational Programme on ventilator care bundle was conducted.

Results

Section 1

Section 1: Description of selected personal variable of final year B.Sc. Nursing students

Table 1: Frequency and percentage distribution of nursing students according to their selected personal variables. n=60

Sl No	Sample characteristics	Frequency (f)	Percentage (%)
1	**Age in years**		
	1.1 18-20 years	60	100
2	**Gender**		
	2.1 Male	10	16.7
	2.2 Female	50	83.3
3	**Religion**		
	3.1 Hindu	18	30
	3.2 Christian	34	56.6
	3.3 Muslim	08	13.4
4	**Have you had previous knowledge about ventilator care bundle**		
	4.1 yes	19	31.67
	4.2 No	41	68.33
5	**Source of Information**		
	5.1 Electronic mass media	05	25
	5.2 Health Personal	14	75

Table 1 shows that majority (83.3%) of the samples were female and were in age group of 18-20 yrs. Most of the samples (56.6%) belonged to Christian religion. 31.67% of the sample had Previous knowledge. Majority of the samples (75%) got the information or knowledge from the health personnels.

SECTION 2:

Section 2: Level of Knowledge of final year B.Sc. Nursing students regarding ventilator care bundle

Knowledge scores were categorized according to Bloom's cut-off points as 80.0–100.0% (good, 20-25 points), 60.0–79.0% (average, 15–19points), and ≤59.0% (poor 0–14 points). Mentioned in table 2

Table 2: Frequency and percentage distribution of nursing students according to their level of knowledge regarding ventilator care bundle n=60

Knowledge level	Frequency	Percentage (%)
Poor	14	23.3
Average	41	68.4
Good	05	8.3

Table 2 shows that majority of nursing students 50(68.4%) had average knowledge regarding ventilator care bundle 05 (8.3%) had good knowledge and 14 (23.3%) had poor knowledge regarding ventilator care bundle.

Table 3: Mean, Median, Range and Standard deviation of knowledge score of nursing students regarding ventilator care bundle

Variable	Mean	Median	Range	Standard Deviation
Knowledge	16.11	14	11 -18	±4.073

Table 3 shows that the mean knowledge score of nursing students is 16.11, ranged 11- 18 with standard deviation of ± 4.073 and the median 14.

SECTION 3

Section 3: Association between level of knowledge of final year BSc. Nursing students regarding ventilator care bundle and their selected personal variables

Discussion

Findings of the present study showed that 60(100%) of nursing students were in the age group of 18-20 years, majority 50(83.3%) of females and

10(16.7%) of nursing students were male. 68.4% of students had previous knowledge regarding ventilator care bundle in that majority 19(75%) of nursing students got information through health person, 5(25%) from electronic mass media, 7(11.66%) from friends and 6(10%) from family members

The above findings were supported with findings of other study conducted to assess level of knowledge regarding ventilator care bundle in prevention of ventilator-associated pneumonia majority of the students 28.3% gained knowledge regarding VAP from electronic media and hospital health information as a source of information.[11]

Majority of nursing students 41 (68.4%)had average knowledge regarding ventilator care bundle, 05 (8.3%) had good knowledge and 14(23.3%) had poor knowledge. The above findings are supported with the findings of another quasi-experimental one group pre-test post-test study conducted to assess the effectiveness of an educational intervention on the knowledge and practice of the staff nurses regarding prevention of VAP among neonates in Neonatal Intensive Care Unit (NICU). The results of the study revealed that, the mean knowledge score of the participants had increased from 21.44±3.06 (pre-test) to 30.26±2.46 (post-test) and the median score for practice prior to the intervention was 21 (interquartile range, Q1=20, Q3=22.5) and after the intervention it was 24 (interquartile range, Q1=23, Q3=25). The educational intervention was found to be effective in terms of improvement in the knowledge.[12]

Conclusion

Ventilator-associated pneumonia (VAP) is a common nosocomial infection in critically ill patients, preventing VAP is one of the important safety issues in critically ill patients receiving mechanical ventilation. Implementation of Ventilator care bundle reduces the risk of VAP. Nurses play a unique role in the implementation of the bundles. Enhancing student nurses' understanding of evidence-based practices is crucial for raising the standard of healthcare. Study findings recommending that there is need to conduct educational programme for final year students who are ready to entering the nursing practice, education programme will enhance the knowledge and develop desirable attitude regarding preventing the ventilator associated pneumonia.

Conflict of Interest: Nil

Ethical Clearance: Obtained from the Institutional ethical committee at JSS Medical college, Mysuru.

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Original Article

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Effectiveness of Calf Muscle Stretching Exercise on leg Cramps among Antenatal Mothers Attending a Tertiary Care Centre Thiruvananthapuram

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Abstract

Background: Leg cramps during pregnancy is a common discomfort characterized by involuntary, painful contraction of muscle groups that usually occur in the calf or small muscles of the foot but can affect different part of the leg. The severity of the leg cramp pain is variable and each attack may take few minutes.[1] The prevalence of leg cramps occurred among 30% to 50% of pregnant women. Leg cramping means painful spasm especially in the lower extremities occurs during pregnancy and mainly occurred in the second half of pregnancy typically occurs at night and usually lasts for a few seconds or 2 minutes.[2]

Materials and Methods: The objective of the present study was to assess the effectiveness of calf muscle stretching exercise on leg cramps among antenatal mothers. The research approach adopted for the study was quantitative approach and the research design was quasi experimental pre-test post-test control group design. Sample size was 80 and the samples who satisfied the inclusion and exclusion criteria were selected consecutively. Informed consent was obtained from those participants who were willing to participate in the study. The investigator collected socio demographic data, clinical data and history of leg cramps by a self- prepared semi structured questionnaire and intensity of leg cramps was assessed using numeric pain rating scale. The investigator demonstrated the stretching exercise and provided with a diary to note down the intensity, duration and frequency of leg cramps and the post-test was conducted after two weeks.

Results: The collected data was analyzed using SPSS version 22 and description of participants based on socio demographic data, clinical data and history of leg cramps were analyzed using percentage and frequencies and the effectiveness of calf muscle stretching exercise on frequency and duration of leg cramps among experimental and control group was analyzed using chi-square test and the calculated p value was <0.05, it was concluded that calf muscle stretching exercise was effective in reducing frequency and duration of leg cramps among experimental group also the effectiveness of calf muscle stretching exercise on intensity of leg cramps was analyzed by

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independent t-test. It was found that the mean difference in NPRS score in the experimental was 2.03±0.66 and in the control group was 0.35±1.14 and the calculated p value was <0.05.

Conclusion: calf muscle stretching exercise is effective in reducing intensity of leg cramps among antenatal mothers.

Key words: leg cramps; stretching exercise; antenatal mothers

Introduction

Leg Cramps is a musculoskeletal disorder characterized by suddenly occurring, episodic, persistently painful, involuntary contractions of the calf, hamstrings or foot muscles.[3] Discomforts during Pregnancy are quite common in second trimester when the musculoskeletal change occurs but do not significantly interfere with activities of daily living or pose any significant threat to the health of the mother or baby, in contrast to pregnancy complications.[3]

In India the prevalence of leg cramps is 64.6%. The prevalence of leg cramps in pregnant women in China affects the calf area, with a percentage of 32.9%, during the first trimester, the response is 11.6% in the second trimester, 51.2%, in last trimester.[4]

Muscle cramps usually occur with a rapid increase of loading of an already shortened muscle. Disturbances in fluid and electrolyte balance in muscles make them more susceptible to cramping. Muscles kept in a shortened for prolonged period of time are more likely to cramp without previous loading.[5]

A number of interventions are available for leg cramps in pregnancy. The most commonly used can be divided into categories like drug/ electrolyte/ vitamin therapies and the non – drug therapies which include muscle stretching, massage, relaxation, heat therapy and dorsiflexion of the foot.[6]

While treating muscle cramps others advice that when cramps occur, the patient should immediately massage and flex the affected muscle, alternatively, and stretching the calf muscle before going to bed by performing simple exercises can also be effective.[7]

Moreover few numbers of interventional studies to reduce leg cramps in pregnancy had been under taken in Kerala so the researcher was interested and decided to develop a type of stretching exercise for antenatal mothers. For reducing this common problem in pregnancy by instructing calf muscle stretching exercise.

Materials Methodology

The research design used for this study was quasi experimental with pre-test post-test control group design. Data was collected from the antenatal mothers of 28-34 weeks gestation at Sree Avittom Thirunal Hospital OPD Thiruvananthapuram.

Study design: Quasi experimental with pre-test post-test control group design.

Study location: This was a tertiary care based hospital study done in Antenatal out- patient department of Sree Avittom Thirunal Hospital, Thiruvananthapuram.

Study duration: May 2022 to August 2023

Sample size: 80 Antenatal mothers

Sample size calculation: Sample size is calculated using the formula

$$N = \frac{2sp^2(Z1-\alpha/2 + Z1-\beta)2}{\mu d^2}$$

$$SP^2 = \frac{S1^2+S2^2}{2}$$

$S1^2$ = Standard deviation in first group

$S2^2$= Standard deviation in second group

μd^2= Mean difference between samples

$1-\beta$ = Power

Standard deviation in group 1 =1.4

Standard deviation in group 2 =1.5

Mean difference = 1

Effect size = 0.689655

Alpha Error(%) = 5

Power (1-β) % = 80

I or 2 sided= 2

Required sample size per group = 33

Anticipating 10% dropout final sample size is 40 per group.

Subject and selection method: Subject in this research study were selected on the basis of intensity, frequency and duration of leg cramps among antenatal mothers who are of 28 to34 weeks of gestation experiencing leg cramps more than two times for two weeks. Samples were selected consecutively based on inclusion and exclusion criteria.

Group A (40): Experimental group instructed calf muscle stretching exercise

Group B (40): Control group with routine management

Inclusion criteria:

- Antenatal mothers who are willing to participate
- Antenatal mothers who have experienced leg cramps more than twice in two weeks

Exclusion criteria

- High risk antenatal mothers
- Antenatal women with psychiatric disorders.

Procedure methodology

The data collection was started after getting permission from Institutional Research Committee, Institutional Human Ethics Committee of Govt. College of Nursing Thiruvananthapuram, superintendent and Head of the department SAT Hospital Thiruvananthapuram. The duration of data collection was six weeks. The total sample size was 80, 40 participants in the experimental group and 40 participants in the control group and the antenatal mothers who satisfied the inclusion criteria and exclusion criteria were selected consecutively. The purpose of the study was explained and written consent obtained from each participant who were willing to participate in the study. The control group was selected initially to avoid contamination and the antenatal mothers were provided with a diary and advice to note down frequency, duration of leg cramps and intensity of pain was assessed by Numeric Pain Rating scale then followed up for two weeks. Mothers who had leg cramps more than two times for two weeks were included. The participants in the experimental group were comfortably seated in a separate room near to antenatal out- patient department and the investigator demonstrated calf muscle stretching exercise and return demonstration was done and doubts were clarified. The experimental group were instructed to practice stretching exercise in five repetitions on 10 second hold done two times a day for two weeks and reinforcement given via phone calls on alternative day. And instructed to write the intensity, duration and frequency of leg cramps on the given diary. Both groups were followed after two weeks and post test was conducted. The data was analysed by appropriate statistical method.

Calf muscle stretching exercise

First procedure

Advice the mother to sit on a firm surface stretch the legs and gently do plantar and dorsiflexion

Second procedure

By sitting on a chair hold a long towel to hold the foot and do dorsiflexion of the foot.

Repeat both the procedure simultaneously for 5 times on 10 second hold done two times a day.

Statistical analysis

Data was analysed using Statistical Package for Social science (SPSS) version 22. The data collected was analysed by means of descriptive and inferential statistics.

1. Description of participants based on sociodemographic data and clinical data was analysed using frequencies and percentage and comparability between experimental and control group was assessed by Chi-square test.
2. Frequency, duration and intensity of leg cramps before and after intervention were expressed in frequency and percentage.
3. Chi-square test was used to assess the comparability between the experimental and control group
4. Effectiveness of calf stretching exercise on intensity of leg cramps was analyzed by independent t-test.

Results

The analysis of the study findings was categorized, organized and presented under following sections.

Section A: Distribution of participants based on socio-demographic data

Section B: Distribution of participants based on clinical data

Section C: Distribution of participants based on history of leg cramps

Section D: Frequency of leg cramps, duration of leg cramps and intensity of leg cramps (NPRS score) among antenatal mothers before intervention.

Section E: Effectiveness of calf muscle stretching exercise on frequency, duration and intensity, (NPRS score) of leg cramps among antenatal women.

Section A: Distribution of participants based on socio demographic data

Regarding the age of participants, 55% of participants in the experimental group and 47.5% of participants in the control group were in the age group of 25-29 years whereas 15% participants in the experimental group and 30% participants in the control group were between the age group of 20-24 years.

Out of 80 participants, 65% participants in the experimental group and 75% of the participants in the control group were Hindus.

Section B: Distribution of participants based clinical data

Among 80 participants, 85% participants in the experimental group and 70% participants in the control group had over weight. Out of 80 participants, 35% participants in the experimental group and 47.5% participants in the control group were second gravida.

Regarding the parity, 42.5% participants in the experimental group and 47.5% participants in the control group were nullipara. Whereas 35% participants in the experimental group and 47.5% participants in the control group were primipara.

Section C: Distribution of participants based on history of leg cramps

Regarding the time of occurrence of leg cramps, 80% of participants in the experimental group and 77.5% participants in the control group had leg cramps during sleep whereas 2.5% participants in the experimental group and 12.5% participants in the control group had leg cramps at rest.

Based on the site of leg cramps, 77.5% participants in the experimental group and 67.5% participants in the control group had leg cramps below and behind knee whereas 15% participants in the experimental group and 20% participants in the control group had leg cramps on the calf muscle.

Section D: Frequency of leg cramps, duration of leg cramps and intensity of leg cramps (NPRS score) of antenatal mothers before intervention

Table 1: Percentage and frequency showing frequency of leg cramps in experimental and control group before intervention

Frequency of leg cramps within group 2 weeks	Experimental		Control group		X^2	df	p
	n = 40		n = 40				
	f	%	f	%			
One time	0	0.0	1	2.5	4.9	3	.170
2 to 3 times	2.1	52.5	28	70.0			
4 to 5 times	15	37.5	7	17.5			
>5times	4	10.0	4	10.0			

Table no 1 showing that 52.5% participants in the experimental group and 70% participants in the control group had leg cramps 2 to 3 times whereas 37.5% participants in the experimental group and

17.5% participants in the control group had leg cramps 4 to 5 times. Since the observed difference was not statistically significant for p>0.05, both the group were comparable based on frequency of leg cramps.

Table 2: Showing Percentage and frequency showing duration of leg cramps in experimental and control group before intervention.

Duration of leg cramps within 2 weeks	Experimental group n= 40		Control group n =40		X^2	df	p
	f	%	f	%			
<5 seconds	8	20.0	11	27.5	1.1	2	.585
5-10 seconds	23	57.5	23	57.5			
>10 seconds	9	22.5	6	15.0			

Table 3: Showing Percentage and frequency showing intensity of leg cramps (NPRS score) among experimental and control group before intervention

Intensity of leg Cramps (NPRS score) within 2 weeks	Experimental group n= 40		Control group n =40		X^2	df	p
	f	%	f	%			
Mild (1-3)	3	7.5	4	10.0	2.3	2	.321
Moderate (4-6)	37	92.5	34	85.0			
Severe (>7)	0	0.0	2	5.0			

From table 23 it is evident that the majority (92.5%) participants in the experimental group and 85% participants in the control group had NPRS score between 4-6. Since the observed difference was not statistically significant for a p value >0.05, both groups were comparable based on NPRS score.

Section E: Effectiveness of calf muscle stretching exercise on frequency, duration and intensity, (NPRS score) of leg cramps among antenatal women.

Table 4: Shows Mean, SD and t value showing the effectiveness of calf muscle stretching exercise on intensity of leg cramps (NPRS score) among experimental and control group

n= 80

Group n Mean SD	Pre-test NPRS Score			Post –test NPRS Score			Difeerence i Pre- test Post- test	t	p
	n	Mean	SD	n	Mean	SD			
Experimental 40	4.85	1.03	2.83	0.96	2.03	0.66	8.1	8.1	0.001
Control 40	4.73	1.24	4.38	1.33	0.35	1.14			

Table no 1 shows mean difference in intensity of leg cramps (NPRS score) in the experimental group was 2.03±0.66 and in the control group was 0.35±1.14 and the calculated p value was <0.05. Hence it is statistically significant and therefore the null hypothesis is rejected and an alternative hypothesis is accepted. Thus, it can be concluded that calf muscle stretching exercise is effective in reducing frequency, duration and intensity of leg cramps among antenatal mothers.

Discussion

The present study was conducted to assess the effectiveness of calf muscle stretching exercise on leg

cramps among antenatal mothers attending a tertiary care centre, Thiruvananthapuram.

Lengthening or stretching the cramping muscle and activating the antagonist muscles helps to stop most cramps based on the observation that stretching exercise will treat acute cramps.[8] Muscle stretching was capable of sharply interrupting cramps induced both by voluntary contraction and by high-frequency stimulation of peripheral nerve.[9]

The present study showed that calf muscle stretching exercise is effective in reducing duration and intensity of leg cramps among antenatal mothers also the present study showed that 70% participants in the experimental group and 20% participants in the control group had mild leg cramps (NPRS score between 1-3) whereas 30% participants in the experimental group and 72.5% participants in the control group had moderate leg cramps (NPRS score between 4-6) and only 7.5% participants in the control group and no one from experimental group had severe leg cramps with NPRS score >7. In the present study, mean difference in the NPRS score in experimental group was 2.03±0.66 and in the control group was 0.35±1.14 and the calculated p value was <0.05 and concluded that calf muscle stretching exercise is effective in reducing intensity of leg cramps among antenatal mothers. The study result was supported by a comparative study which assessed the effectiveness of stretching versus cryotherapy on leg cramps. The study results shown that the mean difference in VAS score in experimental group was 5.966±4.66 and in the control group was 6.3±4.033 at a 5% level of significance and the study concluded that Stretching exercise when given alone reduces the intensity of pain.[10]

Limitations of the study

- The duration of study period was limited to six weeks.
- Long term follow up was not done, so improvement after cessation of active treatment is not known.
- The outcome measures used in the study were subjective, so patient's own perception for her condition may play an important role in measuring her symptoms.

Conclusion

Stretching is the general term used to describe any therapeutic manoeuvre designed to increase mobility of soft tissues and subsequently improve range of motion by lengthening structures that have adaptively shortened and have become hypo mobile over time. Stretching exercise will help to reduce the intensity of leg cramps among pregnant women which were most commonly seen in the second trimester of pregnancy. The researcher was interested and decided to develop a type of stretching exercise for antenatal mothers also during the clinical posting the researcher identify that calf muscle cramps are sever in second trimester of pregnancy and the mothers were suffering due to leg cramps while they were in labour coat. The researcher is interested to reduce this common problem in pregnancy by instructing calf muscle stretching exercise.

Source of funding: self

Conflict of interest: Nil

Ethical clearance from Institutional Ethics Committee Govt. College of Nursing,

Medical college, Thiruvananthapuram Date: 25/1/24 Ref.No: CNT/IEC/58/30/2022

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Original Article

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Assessment of Care Giver Burden and Coping Strategies among Care Givers of Elderly

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Abstract

Introduction: Caregiver burden is experienced by a person who is taking care of a disabled or chronically ill, and an old age person in the family. Many caregivers experience burdens and using various coping strategies in their day-to-day life.

Objectives: The objective of the study was to assess the burden, coping strategies, correlation and association among care givers of elderly with their selected demographic variables.

Methods: By using convenient sampling technique 303 caregivers were recruited in the selected villages of Bardoli, Gujarat. After obtaining written consent caregivers was interviewed. The data was collected on Elderlies and Caregiver's socio-demographic data, Zarit Caregiver Burden Assessment and Brief COPE tools.

Results: Most of them 181 (66.0%) caregivers had moderate level of burden and 92(30%) had high burden and only 30 (10%) of care giver had mild burden. The 10% of the samples had low levels of coping, 30% high levels, and 60% of them with medium levels of coping orientation towards the elderly care. There was moderately positive correlation found between caregiver burden and coping strategies. There was a significant association between care giver burden with their age, care giver relation and time given of care giving. The study revealed that there was a significant association between care giver coping orientation with their age and occupation.

Conclusion: The caregiver's burden is more common among caregivers who care for elderly. Caregivers had been found by using avoidant coping strategies more than problem oriented coping strategies. The Caregiver burden and its impact with various coping strategies need to be explored in detail and measures need to be taken to reduce their burden.

Key words: assessment, Caregiver burden, coping strategies, elderly, Coping orientation

Introduction

Ageing is a normal biological and universal phenomenon. The aging process occurs in a unique manner with every individual. It's a multifaceted

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process in which the individual's functional and health status are influenced by a variety of factors including the genetic and environmental factors[1]. 'The International Day of Older Persons' is celebrated every year on 1st October, where it highlights the contributions of older people to the society and raise awareness on issues and challenges of ageing[2]. Commensurate with the increasing societal importance and recognition of family caregiving, there is an extensive literature on possible effects of caregiving on health. Many studies are informed by stress process theories and models developed by Pearlin et al[5]. (1990) and findings of poorer health, particularly mental health among caregivers have been interpreted as an effect of cumulated stress, physical strain and reduced opportunities for other activities. Currently, 60 percent elderly people live in developing countries. Due to the increased longevity and life expectancy, the quality of life has been considered as an important issue, attracting the attention of the researchers working on ageing [6]. Preparing for an ageing population is vital to the achievement of the integrated 2030 Agenda.

In a report published by Help-Age global network (2019), it states that 761 million populations are above 60 years of age worldwide. An elder's population is predicted to doubles to 20.8 percent in 2050[3]. According to 2023, the 153 million populations are above 60 years of age and it is estimated that in India 1 out of 5 will be a senior citizen aged 60 years and above. The study from India reported that family caregiver's burden is strongly associated with old age persons with physical impairment. The study showed that cognitive impairment in the elderly increases the family caregiver's burden[3]. The earlier study also reported that a daughter-in-law in a care giving role sacrificed her career and separated from her husband. This study is trying to find an answer to the question of does the family members caring for the elderly feel the burden and prevalence of coping adopted at different aspects of their life.

Problem statement: "Assessment of Care giver burden and coping strategies among care givers of elderly living in selected areas of Bardoli, Gujarat."

Purpose of the study to assess the burden and coping strategies, correlation and association among care givers of elderly with their selected socio demographic variables in selected areas of Bardoli.

The Methodology of present study was done based on a quantitative approach. A descriptive survey design was used to evaluate the caregiver burden and coping strategies adopted by care givers living with the elderly. The study was done in selected villages of the Bardoli, Gujarat. The study population was comprised of caregivers living with the elderly. The sample size was calculated by power analysis using sample size estimation formula {S = (Z score)2 × P × (1-p)/ (margin of error)2} and 303 care givers of elderly was recruited using Non-probability convenient sampling technique who were spouse, children, daughter/son-in-law, brother and sister as a caregivers and consented to participate in the study. The **Tool** of the study was divided into three parts. (a) Elderlies and Caregiver's socio-demographic data (b) Zarit Caregiver Burden Assessment[10] (c) Care giver's Coping Orientation to Problems Experienced Inventory (Brief-COPE) [11]. The **Technique** used for data collection was Interview method.

Results: Socio demographic data of Elderly

Majority of elderly, 208(69%) belonged to the age group of 60-70 years and 79(26%) belonged to the age group of 71-80 years and 16(6%) belonged to the age group of 80 years and above. 157(52%) of the Elderly were female and 146(48%) of the Elderly were male. Maximum of the Elderly 233(77%) belonged to joint family and rest of them lived in nuclear family. Majority 96%of them belonged to Hindu religion. Majority 68% were married, 88(29%) of them were widow/widower and 9(3%) of them were unmarried. Half 50% of the Elderly did not have formal education, 105(34%) had primary education, 23(8%) had secondary education and 23(8%) had higher secondary education. Highest 73% of them were Laborers whereas 63(21%) of them non-government job and remaining 19(6%) had government job. Currently 86(28%) are employed. Forty seven percent of them were having monthly family income of Rs. 5000-10,000, Maximum 72% of the them were financially depend on their son/daughter. Majority 78%of them non-vegetarian whereas 65(22%) were vegetarian. 93(31%) of them reported of having habits like smoking and alcohol. Maximum 29% of them were having co-morbid condition like Hypertension, diabetes mellitus and Arthritis.

Socio demographic data of Care giver

Out of 303 care giver most of them, 146(48%) belonged to the age group of 31-40 years. 120(40%) of the care giver were female and 183(60%) of them were male. Highest number of the care giver 125(42%) had primary education and 98(32%) had no formal education. Majority 73% of them were Laborers. Maximum 82% of the care givers were having co-morbid conditions like Hypertension, diabetes mellitus and Arthritis. Maximum of the care givers relation were son/daughter 198 (65%) whereas 62(20%) were relation of husband/wife, 20(6 %) were relation of son in law/daughter in law and remaining 23 (9%) were relation of paid care taker/relatives/ friends. Duration of care giving varied from 6 months to 3 years and above and 24% of them were doing this for 3 years and above, 58% of them for 1-2 years of duration. Majority 47% of the care givers spent 3-4 hours per day in care giving and 10% of them 5 hours and above. Social support was available for 65% of the caregivers and 48% of them had activity limitation due to their care giving role.

Table 1: Findings related to mean, median, mode and standard deviation of burden and coping strategies of care giver of elderly (N=303)

S.N.	Care giver Burden	Problem focused coping	Emotional coping	Avoidant coping	Total Coping strategies
Mean	18.05	17.75	25.90	18.45	62.11
Median	18	17	25	18	61
Mode	17	16	26	17	68
SD	5.93	3.75	4.31	2.8	8.56

It is evident from table number 1 that mean score of burden was 18.05 and coping strategies were 62.11 with a mean difference of 44.06. The SD was 5.93for burden and 8.56 for coping strategies. The above facets of Problem focused, emotional and avoidant coping are analyzed for Self-distraction, Denial, Substance Use, Behavioral disengagement, Emotional Support, Venting, Humour, Acceptance, Self-Blame, Religion, Active Coping, Use of Instrumental Support, Positive Reframing, and Planning among care givers. Among the mean score areas of coping, the mean score for emotional coping was highest 25.90 and SD is 4.3.

Table 2: Findings related to level of burden and coping strategies of care givers. (N=303)

Grading of Score		Care giver burden	Percentage (%)
Grade	Score	F	
Mild	0-4	30	10
Moderate	5-8	181	60
High	9-12	92	30
Total Score	Min-0/ Max-48	303	100

As shown in the table no.2 that 66% of the caregivers had moderate level of burden and 92(30%) had high burden of care giving.

Table 3: Distribution of level of coping strategies adopted by the sample. (N=303)

Grading of Score		Coping strategies	Percentage (%)
Grade	Score	F	
Low	1-9	30	10
Medium	10-18	181	60
High	19-28	92	30
Total Score	Min-28/ Max-112	303	100

As evident from table 3 that, 60% of the care givers had medium levels of coping orientation towards care giver burden and 30% of them had high level of coping strategies.

Table 4: Distribution of specific coping strategies scores of the sample. (N = 303)

Grading of Score		Coping strategies					
Grade	Score	Problem focused coping		Emotional coping		Avoidant coping	
		f	%	f	%	f	%
Low	1-9	128	42	127	42	75	25
Medium	10-18	156	52	171	56	223	73
High	19-28	19	6	05	2	05	2
Total Score	Min-28/Max-112	303	100	303	100	303	100

It is evident from table 4 that 73% of the care givers had avoidant coping, 56% of them had emotional coping and 52% of them had problem focused coping towards care giver burden experienced by them.

Table 5: Corelation between care giver burden and coping strategies (N = 303)

S.N.	Mean score	SD	R value	df	Remark
Care giver Burden	18.05	5.93	0.234	301	Moderately positive correlation
Coping strategies	62.11	8.69			

As evident from table 5, caregiver burden and coping strategies shared moderately positive correlation indicating that increased burden of care giving can influence on coping strategies.

Association of care giver burden and coping strategies with their demographic variables

Care giver burden shared significant association with age ($\chi2=19.64$, $p=0.05$), relationship ($\chi2=38.79$, $p=0.05$) and duration of care giving ($\chi2=2.86$, $p=0.05$). The coping strategies were significantly associated with age ($\chi2=17.05$, $p=0.05$) and occupation ($\chi2=19.16$, $p=0.05$). Rest of the variable did not have association with their care giver burden or coping strategies.

Discussion

Here, 60% of the studied caregivers had moderate level of burden. The mean of emotional oriented coping strategies was higher that is 25.90 while, the mean of problem oriented coping strategies was 17.75 and avoidant oriented coping mean was 18.45. This result agrees with a study done inIndia by **(Ajay S, Kasthuri A, Kiran P, Malhotra R 2017)** [4] they found that, impairments of older persons with caregiver burden among family caregivers due to workload it effects on coping of care givers. There was moderately positive correlation between caregiver burden and using of problem, emotional and avoidant oriented coping strategies. In a study done by **Chen et al. (2018)** [12] they found that, problem-focused coping was negatively correlated with caregiver burden. A study done in Eastern Turkey by **Dayapoğlu & Tan (2017)** [13] reported that, there was a moderate caregiver burden and social support. In this study individual areas were not tested to find out the correlation between two variables.

Conclusions

The caregiver's burden is common among caregivers who care for elderly. Caregivers have been found to be using avoidant coping strategies more than problem oriented coping strategies. Caregiver burden and its impact with various coping strategies need to be explored in detail and measures need to be taken to reduce their burden in physical, economic, social with problem, emotion, avoidance coping areas.

Recommendations:

The researcher recommends that this study need to be replicated in large number of sample size for generalization. The study can be done on economic burden of care givers.

Funding: This is a self-funded project.

Conflicts of Interest: No conflict of interest.

Ethical Clearance: The ethical clearance was obtained from Maniba Bhula nursing college and ethical committee on 27/06/2024 with reference number UTU/Ph.D/255/2024.

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Original Article

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A Comparative Study to Assess the Nutritional Status of Preschool Childern in Selected Rural and Urban Areas, Of Fatehgarh Sahib, Punjab

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Abstract

Malnutrition is like an iceberg, most people in the developing countries live under the burden of malnutrition. Pregnant women, nursing mother and children are particularly vulnerable to the effects of malnutrition. Malnutrition is widely prevalent among weaned infants and preschool children. The aim of the present study is to assess the nutritional status of urban and rural preschool children.

OBJECTIVES (1) To Assess the nutritional status of rural area preschool children. (2) To assess the nutritional status of urban area preschool children. (3) To compare nutritional status among rural and urban area preschool children. (4) To determine associations between nutritional status of rural and urban preschool children with selected socio demographic variables. (5) To develop pamphlet regarding recommended daily allowance for preschool children. **DESIGN:** Non experimental comparative design was selected for the study. **APPROACH:** A descriptive survey approach was used. **SUBJECTS:** The participants were 120 preschool children, 60 from saunti (rural) and 60 from gobindgarh (urban), Punjab.

METHOD: A purposive sampling technique was used to select the sample for study. **DATA COLLECTION TOOL:** An interview schedule and observation check list was used to collect data from the subjects. **DATAANALYSIS:** The obtained data was analysed using descriptive and inferential statistics and interpreted in terms of objectives and hypothesis of the study. The level of significance was set 0.05 levels.

RESULTS: The researcher found the rural preschool children nutritional status 66.7% (40) had moderate nutritional status and 33.3% (20) had adequate nutritional status. Regarding urban preschool children nutritional status, 30.0% (18) had moderate nutritional status, and 70.0% (42) had adequate nutritional status.

CONCLUSION: From the analysis report the researcher concluded that there is significant difference between nutritional status of urban and rural preschool children and distributed pamphlet regarding RDA to mothers of preschool children with a view to improve the nutritional status.

Key words: Preschool children, Rural area, Urban area, Nutritional status, Malnutrition, Pamphlet, Recommended Daily Allowance.

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Introduction

(Hailu A, TessemaT. Ethiopian MedicalJournal.1997 Oct; 35(4):235-44) Malnutrition has been defined as "a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients". The effects of malnutrition on the community are both direct and indirect. The direct effects are nutrition deficiency diseases and indirect effects are a high morbidity and mortality among young children. According to data collected by National Nutrition Monitoring Bureau in 10 states in India, the percentage of preschool children suffering from severe, moderate, mild and no malnutrition was 8.4, 34.4 and 14.3 respectively.**01 (Dr. Dheeraj. 2010; 41; 682-696)** Nutrition may be defined as the science of food and its relationship to health. It is concerned primarily with the part played by nutrients in body growth, development and maintenance; Food means not only proteins, fats, minerals, vitamins and other nutrients- but much more; it is part of security and civilization. Nations and civilizations are linked together not only by ideas, but also by bread. Hunger and malnutrition are problems everywhere and have harassed mankind and threatened peace throughout history Today, malnutrition is less visible. We need more sophisticated understanding of this dangerous problem. Children of all shapes and sizes can be malnourished, since nourishment is dependent upon nutrient intake not body weight. Physically, these malnourished children do not appear nutrient deficient. They are malnourished, because their foods lack the nutrients their bodies need. Since their bodies are still growing, children are particularly affected.**02**

(Gupta MC, Mahajan BK 2003) The ecological factors related to malnutrition are, conditioning influences (diarrhoea, intestinal parasites), cultural influences (food habits, customs, beliefs, religion, food fads, cooking practices), socio economic factors (poverty, ignorance, insufficient education, large family size). According to food production, it is said that there will be very little malnutrition in India today if all the food available can be equally distributed in accordance with physiological needs. Health and other services like nutritional surveillance, nutritional rehabilitation, nutritional supplementations and health education are the key element in identifying the realistic picture of nutritional status and its development.**03**

(Park, K, 20thed. edition 2008, p.460-465) Malnutrition is the most widespread condition affecting the health of children. A childhood mortality study in the America showed that not less than 50% of the children who died before the age of 5years were found to have malnutrition as underlying or associated cause of death during 2000 to 2007, more than 255 of the world's children under the age 5years were under weight for their age. The proportion ranged from 1% of the children in developed countries to 26% in developing countries. In India the national family health survey (NFHS) 2005-06 included survey of the nutritional status of young children. Both chronic and acute under nutrition were found to be high in all the 7 states for which reports have so far been received, namely Haryana, Karnataka, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and Goa. **04**

Material and Methods

The present study is aimed at a comparative study to assess nutritional status of preschool children in selected rural and urban areas Punjab, with a view to develop Pamphlet regarding Recommended Daily Allowance.

Data Collection

Formal permission was obtained from the concerned authority to conduct the study. The study was conducted during the month of March and April 2023. Samples were selected in accordance with laid down criteria. Consent was obtained from each preschool children parent after giving assurance of confidentiality. Each day 6 subjects were assessed. About 45 minutes were spent for each subject. Nutritional status was assessed by checking weight, height, head circumference, chest circumference and mid arm circumference and head to foot assessment. Thus, data collection was completed within stipulated time period.

Data Analysis

The socio demographic variables were described descriptively in terms of frequency and percentage. At test was done to compare the nutritional status of gobindgarh (urban) and saunti (rural) preschool children. A chi square ($\chi 2$) test was done to find out association between the nutritional status of

urban and rural preschool children with selected demographic variables.

Findings

Both descriptive and inferential statistics were used to analyse the data. Analysis is organized under the following headings.

Section A: Socio demographic variables of urban and rural preschool children.

Section B: Deals with comparison of nutritional status among rural and urban preschool children.

Section C: Deals with association between nutritional status and socio demographic variables of rural and urban preschool children.

Review of Literature

A study was done to find out the prevalence and severity of malnutrition in preschool children in a rural area. Anthropometric indices are presented for 2,103 children collected priorto and during intervention. The result showed that U5 mortality was 259. The prevalence of stunting (z-scores for weight-for -age <-2), wasting (z-scores for weight – for height - <-2) and being under weight (z- scores for weight- for-age <-2) was 30%, 4% and 20%, respectively, this was severe (z-score <-3) in 12% (stunting). 1% (wasting) and 5% (underweight) of the children. The study concluded that malnutrition is likely to interact with infectious diseases, placing the U5 children at high risk for mortality and morbidity.[01]

A study was done on comparison of the prevalence of stunting, wasting and underweight among children 3-5 year and 0-3 years. The study result showed that an overestimation of the prevalence of stunting, wasting and underweight in 3-5 years was 3.0, 0.3 and 2.6% points, respectively, and of 4.8, 1.0 and 5.2% points, respectively, in 0-3 years age group. The study concluded that comparable age ranges are essential in nutrition surveys for monitoring trends and evaluating programme impact. Greater awareness of early child under- nutrition is needed among policy makers.[02]

Summary

The purpose of this study was to compare the nutritional status of rural and urban preschool children. A non-experimental comparative design was used to conduct the study among preschool children. In order to achieve the objectives of this study, purposive sample technique was used to collect data. The data was collected from 120 preschool children 60 from urban and 60 from rural who are residing in saunti and gobindgarh.

Conclusion

The data was collected from the preschool children. The collected information was organized, tabulated, analysed and interpreted using descriptive and inferential statistics. Analysis was done based on the objectives and hypothesis of the study. The level of significance was set at 0.05 levels.The study was taken to a compare the nutritional status of preschool children in selectedurban and rural areas Punjab, regarding RDA. In the present study 120 preschool children were selected using purposive sampling technique.

The research approach adopted in the present study was a survey approach and non-experimental comparative design and with a view to assess the nutritional status of preschool children regarding RDA. A structured interview questionnaire and observation check list was used to assess the nutritional status of preschool children.The data was interpreted by suitable appropriate statistical methods.

Conflict of Interst: there were no conflicts of interest.

Source of Finding: This study if self-funded.

Ethical Clearance: prior to data collection, formal written permission was taken from research and ethical committee, **Dr. Prabhjot Singh associate professor and Ms. Dilpreet Kaur Sohi assistance professor ref.no (DBU/24) Date (6.04.2023)** desh bhagat university mandi gobindgarh Punjab. After that, permission was taken from principal of desh bhagat university. anonymity of the subjects and confidentiality of information was maintained. They were assured that their responses would be kept confidential and used only for research purpose.

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INTERNATIONAL JOURNAL OF NURSING CARE

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