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An Exploratory Study to Assess The Utilization of Contraceptive Methods and their Effectiveness Among Women in A Selected Community

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Abstract

This was an exploratory study conducted to assess the utilisation of contraceptive methods and their effectiveness among women residing in a selected community in India's capital city of Delhi. The study was aimed at understanding the contraceptive choices of married Indian women in a semi-urban community and link it with the larger picture of contraception use in India. It also sought to gauge the understanding of family planning practices in Indian women, contraceptive decision-making in Indian households and the effectiveness of the birth control methods used in India.

The study also aimed to understand the factors influencing contraception in India by determining the association of contraceptive utilisation with selected demographic variables. The subjects were quizzed using a structured questionnaire to accomplish the stated objectives in the study.

This study actually gave us few important insights into married women's contraception behaviour and the socio-cultural factors influencing contraception in India. The results confirmed that 97.5% of the subjects had good utilisation of contraceptives compared to only 0.75% reporting poor utilisation. This is a win for the numerous government schemes for family planning in India.

97% of subjects did not encounter any unwanted or unintended pregnancies which showcases high effectiveness of contraception. It was also found that there was significant association of utilisation of contraceptive methods with multiple demographic variables including - monthly income of subjects, their level of access to healthcare services and previous source of information about contraception; all at 0.05 level of significance.

Keywords: Contraceptive use among married women in India, Utilisation of Contraception in India, Effectiveness of contraception in Indian women, Socio-cultural factors influencing contraception in India, Family planning practices in India, Contraceptive choices of Indian women.

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Introduction

India being the first country to introduce a nationwide Family Planning Programme in 1952 still struggles to create an impressive impact in the realm of family planning. The contraceptive usage of any method in India by 2030 is estimated to be only 64.6% by WHO (World Health Organization) (median estimate).¹ Family planning services can help in controlling Indian population growth which is mainly due to the following three reasons. The first one is the unmet need of family planning which is always higher for reversible methods. The second cause is the age at marriage and first child birth. In India 22.1% of the girls get married below the age of 18 years.¹ The third being the spacing between births which improves the chances of survival of infants and also helps in reducing the impact of population momentum on population growth if a minimum of 3 years of spacing is maintained.

With nearly 150 crore people, India suffers from the problem of overpopulation. According to a study published in March 2024 in *Lancet*², India's current fertility rate is 2.2 births per woman. A fertility rate of this value drastically increases a population over time.

According to the National Family Health Survey 5 (NFHS 5, 2019-21), the average utilisation of contraception in India among married women of age 15-49 is 66.7%; which is better than the WHO estimate for 2030 and up from 53.5% in NFHS 4 (2015-16). But this is skewed in favour of urban women who have a utilisation percentage of 69.3% compared to rural women at 65.6%. The data also shows that female sterilisation is the most popular modern method of contraception at a whopping 37.9%. Compared to this male sterilisation is at a lowly 0.3% even lower than the injectables method which is chosen by 0.6% of women. While condoms are the next method of choice at 9.5% [urban (13.6%) and rural (7.6%)] pills find 5.1% takers. Centchroman (Ormeloxifene), was developed at CDRI, Lucknow in 1967. This drug was launched as Saheli and Choice-7 in 1992. The Ministry of Health and Family Welfare,

India introduced Centchroman in the National Family Planning Programme under the trade name "Chhaya" from April 2016.

In the past two decades, we found numerous studies which studied any one or compared two methods of contraception being used in India. We also found studies linking contraception use to rural and urban settings, regional differences and economic constraints. But there was very less data to determine what factors influenced a woman's decision to use contraception, and which one, if it was available and not scorned upon. We needed a broader sub-section of female population which could be observed in one setting but have a range of age and educational background along with differing socio-political influences. Once we found such a setting and population, we were sure it will give us invaluable insight into the contraceptive choices of a semi-urban Indian woman.

This study is being conducted to understand the impact and effectiveness of contraception utilisation in our communities, so that we can improve our approach to educate the population and increase its prevalence. We need to understand why a certain section of women choose to use contraception? Why do they prefer a certain contraception method over the other and what is the reason for switching methods if they do. Having a clearer idea of these relationships will help us develop better and more effective family planning schemes and take us closer to our goals of population control and maternal health.

Main Objectives

1. To assess the utilisation of contraceptive methods among women residing in a selected community in Delhi.
2. To explore the effectiveness of the usage of contraceptive methods in terms of family planning and birth control among women residing in a selected community in Delhi.
3. To determine the association of the level of utilisation of contraceptive methods with selected demographic variables.

Research Methodology

For the present study, a quantitative research approach and an exploratory research design was employed to gain a comprehensive understanding of the utilisation and effectiveness of family planning methods among women in the selected community in Delhi.

Before conducting the study, Ethical permission (Ref: SSHEC/R0320 dated 13.03.2024) was obtained from the Institutional Ethical Committee (IEC) of St. Stephen's Hospital. Administrative approval was obtained from RHTC, Najafgarh for the final study. Written informed consent was also obtained from the subjects after explaining the purpose of the study. The confidentiality of their response and anonymity was assured throughout the study.

The **demographic variables noted were** - age, marital status, education, occupation, number of children, income level, access to healthcare, and previous sources of family planning information.

The target population for this study includes married women residing in the selected community and the setting selected for the present study was the rural community in Delhi's Najafgarh area. Purposive sampling technique was used for a total sample size for the present study is 400 married women. A structured questionnaire was used as the tool to collect data from the eligible women in the selected community. To ensure the content validity of the tool, it was submitted to 9 experts from the department of community medicine, obstetrics and gynaecology and medical surgical nursing.

After incorporating their suggested modifications, the reliability of the tool was established using Kuder-Richardson 20 (KR 20) method for the structured questionnaire and it was found to be 0.8. Therefore, the tool was found to be reliable.

The final study was conducted from May 06, 2024 to May 25, 2024 in the rural community of Delhi's Najafgarh region

Data Analysis

Findings related to demographic characteristics of subject

Table 1. Frequency and Percentage Distribution of Socio-Demographic Characteristics of the Subjects

N = 400

S No	Demographic Variables	Frequency	Percentage (in %)
1	Age (in years)		
	18-25	148	37.00
	26-35	197	49.25
	36-45	55	13.75
	> 45	0	0.00
2	Level of education		
	No Formal Education	14	3.50
	Primary School	86	21.50
	Secondary School	110	27.50
	Graduate	190	47.50

Continue....

3	Number of children		
	None	14	3.50
	1-2 children	312	78.00
	3-4 children	72	18.00
	5 or more children	2	0.50
4	Monthly household income (in Rupees)		
	0 - 7,000	17	4.25
	7,001 -15,001	275	68.75
	15,001 - 25,000	97	24.25
	25,001 - 40,000	11	2.75
	> 40,000	0	0
5	Access to healthcare services		
	Very Difficult	0	0.00
	Difficult	14	3.50
	Neutral	62	15.50
	Easy	294	73.50
	Very Easy	30	7.50
6	Previous source of family planning information		
	Educational Institutions	13	3.25
	Family and Friends	207	51.75
	Healthcare Provider (doctor, nurse, etc.)	133	33.25
	Television & Radios Programmes	47	11.75
	Others	0	0

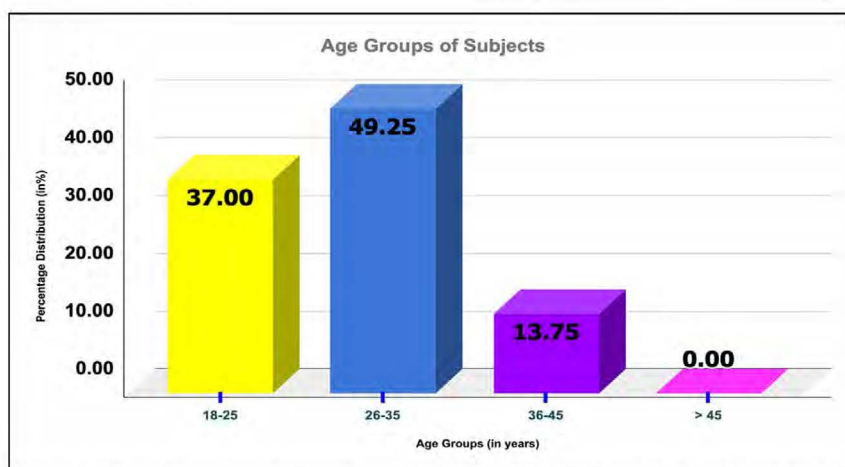


Figure 1: Bar Graph Depicting Percentage Distribution Related To Age Of The Subjects.

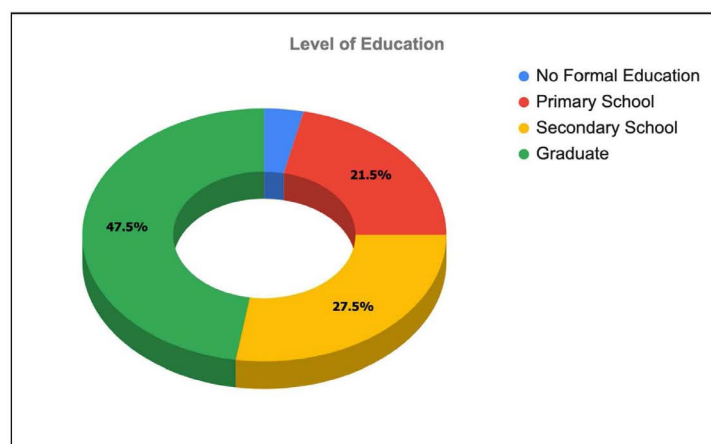


Figure 2: A Doughnut Chart Depicting Percentage Distribution Related to Educational Level of the Subjects.

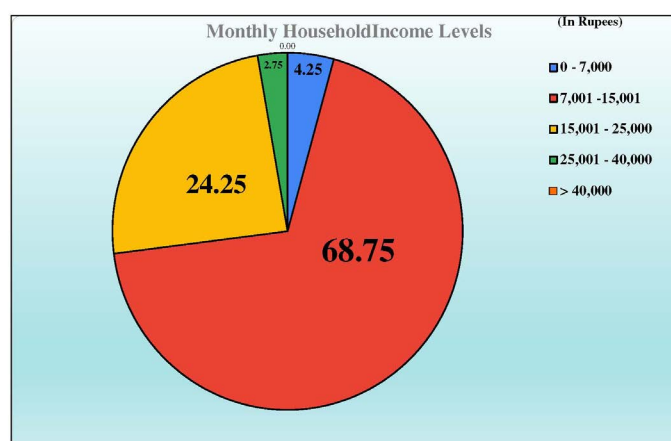


Figure 3: Pie Chart Depicting Percentage Distribution Related to Monthly Household Income of Subjects.

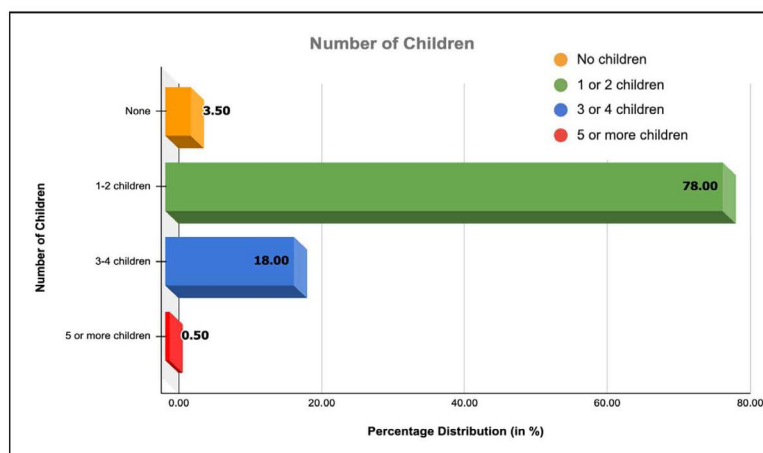


Figure 4: A Bar Chart Depicting The Percentage Distribution Related to The Number of Children the Subjects Have.

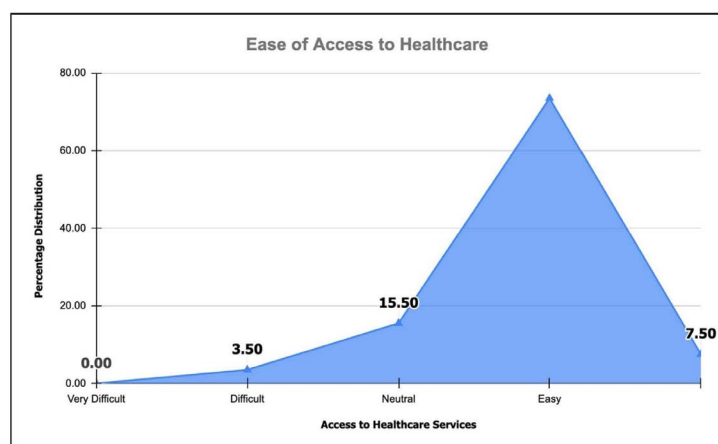


Figure 5: An Area Chart Depicting Percentage Distribution Related to Access to Healthcare Services for Subjects.

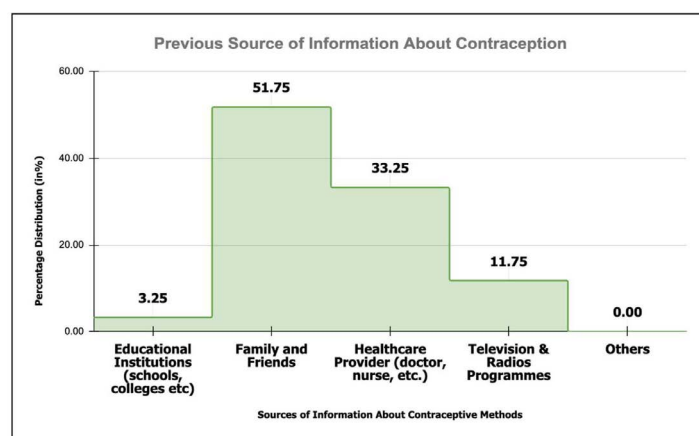


Figure 6: Stepped Area Chart Depicting Percentage Distribution Related to Source of Previous Information Regarding Family Planning.

Findings related to the Utilisation of Contraceptive Methods

Data presented in Table 2, signifies that:

Table 2. Frequency and Percentage Distribution of Utilisation Level of Contraceptive Methods Among the Subjects N = 400

Level of Utilisation	Utilisation Score	Frequency	Percentage (in %)
Poor	0 – 9	3	0.75
Average	10 – 14	8	2.00
Good	15 - 20	389	97.25

- 389 (97.25%) subjects had good utilisation of contraceptives.
- 8 (2%) subjects had average utilisation of contraceptives.
- 3 (0.75%) subjects had poor utilisation of contraceptives.

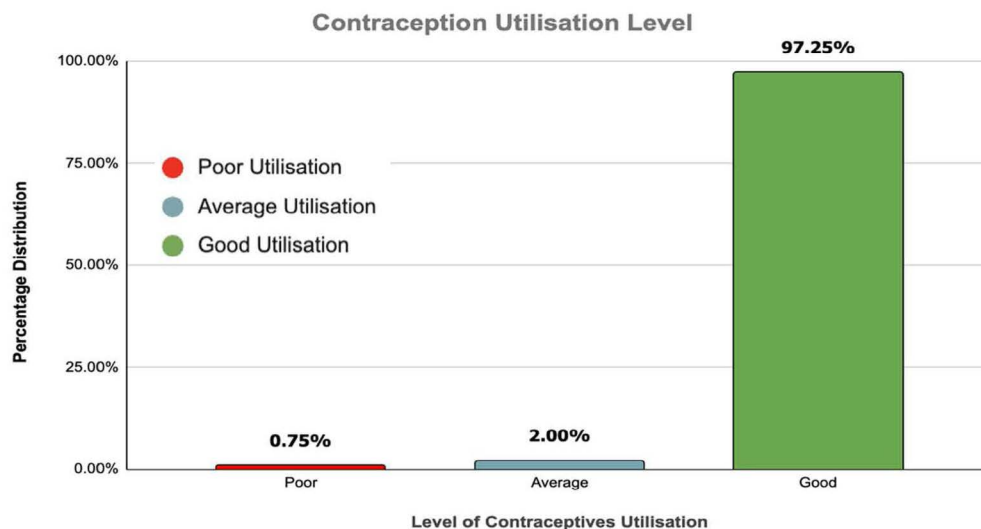


Figure 7: A Column Chart Showing the Percentage Distribution of Contraceptive Utilisation Levels for Subjects

Findings Related to the Effectiveness of Contraceptive Methods

Table 3. Frequency and Percentage Distribution of Effectiveness Score for Subjects

N = 400

Level of Effectiveness	Effectiveness Score	Frequency	Percentage (in%)
Effective	1	388	97.00
Ineffective	0	12	3.00

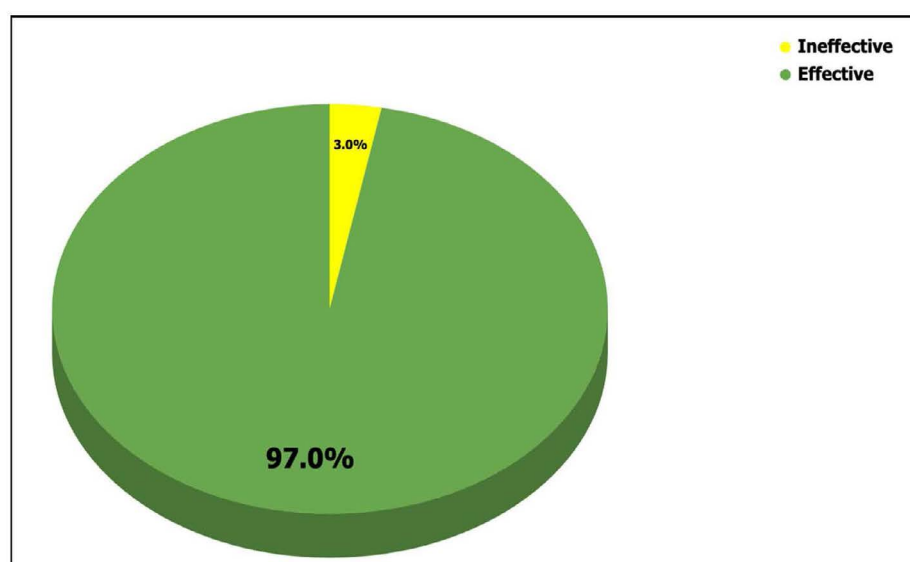


Figure 16: Pie Chart Depicting Percentage Distribution of Effectiveness Scores for Subjects

Table 4(a): Frequency and Percentage Distribution of Socio-Demographic Characteristics of the Subjects According to Contraceptive Methods Used. **N = 00**

Demographic Variables	CONTRACEPTIVE METHOD USED (in %)					
	Calendar Method	Condoms	Injectables	IUCD	Pills	Tubectomy
Age (in years)						
18-25	30.41	41.89	3.38	10.81	13.51	0.00
26-35	22.84	31.98	7.11	16.24	19.80	2.03
36-45	52.73	16.36	1.82	7.27	16.36	5.45
> 45	0.00	0.00	0.00	0.00	0.00	0.00
Level of education						
No Formal Education	100.0	0.00	0.00	0.00	0.00	0.00
Primary School	41.86	39.53	5.81	4.65	6.98	1.16
Secondary School	48.18	30.91	1.82	4.55	10.91	3.64
Graduate	8.42	34.74	6.84	22.63	26.32	1.05
Number of children						
None	28.57	57.14	0.00	0.00	14.29	0.00
1-2 children	19.87	39.42	5.45	15.38	18.59	1.28
3-4 children	70.83	4.17	4.17	5.56	11.11	4.17
5 or more children	100.00	0.00	0.00	0.00	0.00	0.00

Table 4(b): Frequency and Percentage Distribution of Socio-Demographic Characteristics of the Subjects According to Contraceptive Methods Used. **N = 00**

Demographic Variables	CONTRACEPTIVE METHOD USED (in %)					
	Calendar Method	Condoms	Injectables	IUCD	Pills	Tubectomy
Monthly household income (in Rupees)						
0 - 7000	76.47	23.53	0.00	0.00	0.00	0.00
7001-15000	34.18	36.00	5.09	6.91	16.73	1.09
15001-25000	11.34	28.87	6.19	30.93	19.59	3.09
25001-40000	9.09	27.27	0.00	27.27	27.27	9.09
> 40000	0.00	0.00	0.00	0.00	0.00	0.00

Continue....

Access to healthcare services						
Very Difficult	0.00	0.00	0.00	0.00	0.00	0.00
Difficult	57.14	21.43	7.14	7.14	7.14	0.00
Neutral	40.32	35.48	4.84	6.45	12.90	0.00
Easy	27.89	35.37	4.42	12.59	18.71	1.02
Very Easy	13.33	16.67	10.00	33.33	13.33	13.33
Previous source of family planning information						
Educational Institutions	15.38	61.54	0.00	7.69	15.38	0.00
Family and Friends	49.76	33.82	1.93	6.76	7.73	0.00
Healthcare Provider	7.52	24.81	9.77	24.06	29.32	4.51
TV & Radio Programmes	8.51	48.94	6.38	10.64	23.40	2.13
Others	0.00	0.00	0.00	0.00	0.00	0.00

Table 5. The Percentage Distribution of Subjects Facing Side Effects While Using Various Contraceptive Methods.

Contraceptive Method	Subjects using method	Side Effects	
		Reported by:	Percentage (in %)
IUCD	52	32	61.54
Pills	68	7	10.29
Injectables	100	10	10.00
Calendar Method	119	3	2.52
Condoms	134	3	2.24
Tubectomy	7	0	0.00

Table 6. The Percentage Distribution of Subjects Facing Unwanted/Unexpected Pregnancies While Using Various Contraceptive Methods.

Contraceptive Method Used	Subjects	Unintended Pregnancies	Percentage of Failure (in%)
Calendar Method	120	5	4.17
Condoms	135	5	3.70
Pills	68	2	2.94
IUCD	50	1	2.00
Injectables	20	0	0.00
Tubectomy	7	0	0.00

The Association of Contraceptive Utilisation with Selected Demographic Variables.

Data presented in Table 7(a) shows that:

Table 7 (a): The Association of Contraceptive Utilisation With Selected Demographic Variables.**N = 400**

S No	Demographic Variables & Range	Utilisation			df	Chi Square Value (critical value)	P value
		Poor	Average	Good			
1	Age (in years)						
	18-25	2	2	144	4	5.397 *NS (9.49)	0.249
	26-35	1	6	190			
	36-45	0	1	54			
	> 45	0	0	0			
2	Level of education						
	No Formal Education	0	0	14	6	5.924 *NS (12.59)	0.432
	Primary School	1	1	84			
	Secondary School	2	1	107			
	Graduate	0	7	183			
	Post Graduate	0	0	0			
3	Number of children						
	None	0	0	14	6	1.137 *NS (12.59)	0.98
	1-2 children	2	7	303			
	3-4 children	1	2	69			
	5 or more children	0	0	2			

- There is no significant association of the utilisation of contraceptive methods with the age group, education level or the number of

children they have as the calculated Chi square value is less than the table value at 0.05 level of significance.

Data presented in Table 7(b) shows that:

Table 7 (b): The Association of Contraceptive Utilisation With Selected Demographic Variables.**N = 400**

S No	Demographic Variables & Range	Utilisation			df	Chi Square Value (critical value)	P value
		Poor	Average	Good			
4	Monthly household income (in Rupees)						
	0 - 7,000	0	0	17		13.475	
	7,001 -15,001	1	5	269		**S	0.036
	15,001 - 25,000	1	4	92	6	(12.59)	
	25,001 - 40,000	1	0	10			
	> 40,000	0	0	0			

Continue....

5	Access to healthcare services						
	Very Difficult	0	0	0		13.702	
	Difficult	1	0	13		**S	0.036
	Neutral	0	0	62	6	(12.59)	
	Easy	1	8	285			
	Very Easy	1	1	28			
6	Previous source of family planning information						
	Educational Institutions	1	1	11			
	Family and Friends	2	5	200		14.022	
	Healthcare Provider	0	1	132	6	**S	0.029
	TV & Radio Programme	0	2	45		(12.59)	
	None	0	0	2			

- There is significant association of the utilisation of contraceptive methods with the monthly household income of subjects as the calculated Chi square value (13.545) is greater than the table value (12.59) at 0.05 level of significance.
 - There is significant association of the utilisation of contraceptive methods with access to healthcare services as the calculated Chi square value (13.702) is greater than the table value (12.59) at 0.05 level of significance.
 - There is also significant association of the utilisation of contraceptive methods with the previous source of family planning information as the calculated Chi square value (14.022) is greater than the table value (12.59) at 0.05 level of significance.
3. There is significant association of the utilisation of contraceptive methods with monthly income of the household, access to healthcare services and previous source of information about contraception at 0.05 level of significance.

Discussion

The findings of the study indicate a high level of contraceptive utilisation among the married women in this community which is rural. This was in line with the 2021 cross-sectional survey by K. Sharma and Abhey Minhas carried out a to study the contraceptive usage and preferences among young married women in Himachal Pradesh³. Then they had found the current use of any contraceptive method (traditional and modern) was 85%. They also found younger women opting for traditional and temporary methods and women after age of 26 to be opting for more permanent solutions like tubectomy, which are concurrent with my study too.

Another aspect of the study was finding that over 61.54% of IUCD users experienced some kind of side-effect. Of the five women in our sample who changed contraceptive methods due to side-effects, 3 used IUCDs but only one of them was counselled

Main Results of Thestudy

1. 97.25% of subjects had good utilisation of contraceptives and only 0.75% who had poor utilisation.
2. 97% of subjects did not encounter any unwanted or unintended pregnancies while using contraception; i.e. had effective contraception.

prior. This actually adds to the discoveries of Sunita Singal, S. K. Sikdar, S. Kaushik, Pragati Singh, Nidhi Bhatt, Ghazaleh Samandari, Manoj Pal, Levent Cagatay, Anupama Arya & Kathryn A. O'Connell from 2021⁴. In their cross-sectional household study to understand factors associated with continuation of IUCD use in Gujarat and Rajasthan, they found that. Clients experiencing side effects or other problems were 15 times more likely to discontinue IUCD use. Their study demonstrated the value and benefits of programmes offering IUCD services emphasising quality counselling and client-centred care to increase access, uptake, and continuation, which is one of our observations too.

Our studies did find some inconsistency when compared to the results of the community-based cross-sectional survey by Sowmya, Ansuya, V. Vinish from 2020 which meant to assess the utilisation and barriers for non- utilisation of contraceptives among married women of Udupi district, Karnataka, India⁵. The survey involved 323 married women aged 18–45 years. The result of the study showed low utilisation of contraceptives at 38.7%. The most frequently used method was tubectomy (73.6%). Copper T (14.4%) and male condom (8.0%) were predominant among the temporary family planning methods used by the study population. This shows a very different idea from our study where we have very high utilisation (97.25%), high usage of condoms and very low acceptance of IUCDS and opting in for Tubectomy.

Conclusion

There is significant association of the utilisation of contraceptive methods with monthly income of the household, access to healthcare services and previous source of information about contraception.

As for limitations, the study's findings may not be applicable to women outside the selected community due to cultural, socioeconomic, or demographic differences. Also, the reliance on self-reported

data introduces the possibility of recall bias, social desirability bias, and inaccurate reporting.

We recommend that the study be conducted on a larger sample size in different settings. The future course of research will be to conduct longitudinal research to track contraceptive use and effectiveness over time, providing insights into how usage patterns and outcomes evolve. Such studies must include participants from multiple communities to enhance the generalizability of the findings and understand regional variations in contraceptive use. We can also expand the research to include the involvement of men in contraceptive decision-making and use, understanding how male partners influence contraceptive choices.

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Declaration of Conflicts of Interest Statement: Na

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Parental Phubbing Among Mothers of School Age Children and it's Risk for Child's Behavioral Problems

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Abstract

The present study assessed parental phubbing among mothers of school-age children and its risk for behavioral problems. Objectives included determining the level of parental phubbing, assessing children's behavioral risk, finding the correlation between the two, and identifying associations with socio-personal variables. The study was based on Nola Pender's Health Promotion Model and used a descriptive design. It was conducted in the Pediatric OPD of KIMSHEALTH among 120 mothers selected through consecutive sampling. Data were collected using a structured questionnaire, the Spanish version of the Phubbing Scale, and SAEBRS.

Results showed that 2.5% had mild, 63.3% moderate, and 34.2% severe phubbing. The mean behavioral problem score was 29.08 ± 8.738 , indicating a significant risk. A negative correlation was found between parental phubbing and children's behavioral outcomes. Significant associations were observed with mother's age, number of children, education, type of family, and phone usage ($p < 0.05$). The study concluded that parental phubbing poses a significant risk (77.5%) for behavioral problems in school-age children.

Keywords: Parental Phubbing, Risk for child's behavioral problems, School-going children, Mothers of school-age children, Behavioral problems, Spanish version of phubbing scale, SAEBRS - (Social, Academic, and Emotional Behavior Risk Screener)

Introduction

In today's digital age, smartphones have become an integral part of everyday life, offering instant access to entertainment, communication and information. While the main purpose of early mobile phones was to make and receive calls, modern phones are multifunctional devices equipped with features such as web browsing, gaming, high resolution cameras, video playback, and GPS navigation systems.¹ Mobile phone use has several advantages, such as easy and fast communication, which surpass certain minor disadvantages, especially in terms of the quality of relationships.²

Phubbing is defined as "the act of ignoring someone present in favour of a mobile phone" or "using a smartphone in a social setting of two or more people, and interacting with smartphone rather than the person or people present".³

The term "phubbing" was coined by an Australian marketing agency in May 2012 to describe the growing trend of people checking their phones rather than engaging with those physically present. Shortly after, the movement to "Stop Phubbing" was launched.⁴ In the modern digital age, where digital distractions often divert parental attention, the issue of parental phubbing has gained attention,

particularly for its potential effects on child development and behaviors.⁵

As of 2022, there were approximately 6.4 billion subscription of smartphone mobile network globally; by 2028, that figure is expected to rise to over 7.7 billion.⁶

In India, 658 million people were using the internet, according to the Digital 2022 report. At the beginning of 2022, 47% of Indians were online. However, it is important to note that research on internet adoption may still be affected by COVID-19-related challenges, suggesting that actual numbers of internet users may be higher than those reported.⁷

According to a study done at the University of Kent in Canterbury, UK, nearly 17% of persons phub other people a minimum of four times every day. Two or three phubbing's each day are reported by nearly 32% of respondents. Research indicates that phubbing may be harming interpersonal relationships and possibly mental health, even though the habit may not seem like a major concern.⁸

The quality of communication, the warmth of the parents, the attachment style of the parents, and the externalizing and internalizing issues that teenagers face can all influence on the relationships between parents and children. Parental distraction from technology, especially cell phones, can have a detrimental impact on the connection between parents and children.⁹

Need and Significance of the Study

Parental Phubbing is a manifestation of a harsh parenting style that involves parents' psychological attacks on children, such as neglect, rejection, and denial of their psychological needs, and their negative feelings or attitudes toward children, such as insensitivity. The negative consequences of parental phubbing include children feeling ignored or rejected and even a decline in their bond to their parents.¹⁰

A descriptive study conducted among 50 mother-child pairs (aged 10-16 years) in a hospital

in Kozhikode, Kerala, assessed maternal phubbing and mother-child relationship. Using purposive sampling, the study found that 70% of mothers had mild phubbing, and 88% reported closeness in the relationship. However, maternal phubbing showed a positive correlation with interpersonal conflict ($r = 0.644$) and a negative correlation with closeness ($r = -0.392$).¹¹

Parental phubbing is an emerging issue that adversely affects children's physical, emotional, and psychological development. Despite high smartphone use in India, research on its impact on children's behavior remains limited. Hence, this study aims to assess its prevalence among mothers of school-age children and its association with behavioral problems.

Conceptual/Theoretical Framework

The theoretical framework of the present study is based on the Penders Health Promotion Model (HPM) designed by Nola J Pender (2002)¹². The Health Promotion Model was designed to be a "complementary counterpart to models of health protection."

The major concept of the model is Person, Environment, Nursing, Health and illness. The Components of The model focuses on three areas: individual characteristics and experiences, behavior-specific cognition and affect, and behavioral outcomes. It emphasizes that each person has unique traits influencing health actions. Behavior-specific factors like perceived benefits, barriers, self-efficacy, and interpersonal influences can be modified through nursing interventions. These changes promote health-enhancing behaviors, leading to better health, improved function, and enhanced quality of life.

In this study, the outcome focuses on adopting behaviors that improve well-being, especially reducing parental phubbing to enhance parent-child relationships and family dynamics. Nursing intervention includes providing an informational booklet to raise awareness about phubbing and its risks to children.

Nola J Pender's model for health promotion is the very acceptable modal to be employed in the present study because the self-learning through planned

teaching program enables mothers to get adequate awareness regarding parental phubbing.¹²

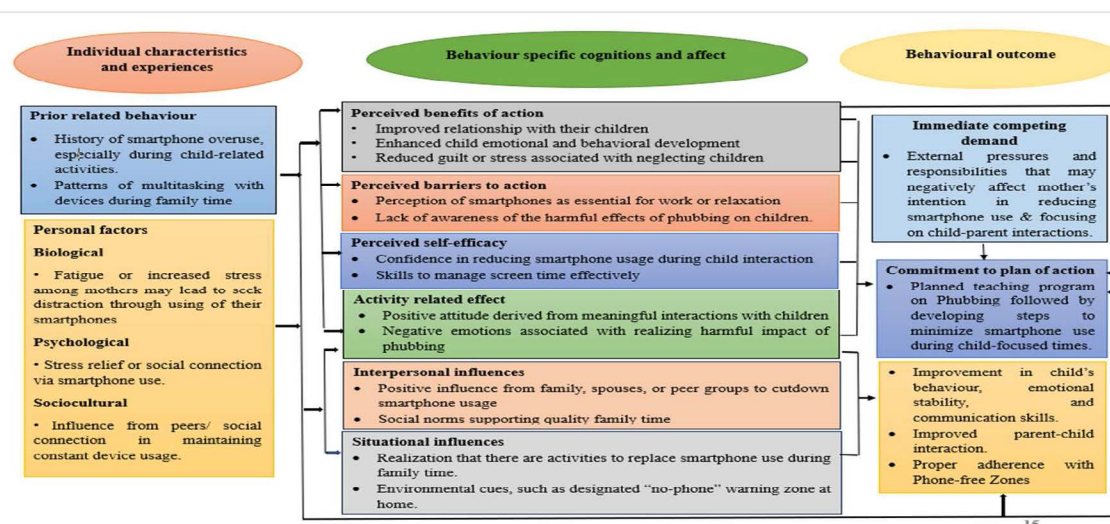


Figure no 1: Conceptual framework of the study based on Pender's Health Promotion

Pilot Study

To check the feasibility of the study, a pilot study was conducted from 20.11.2024 to 20.12.2024 among 10 mothers of school-age children in the Pediatric OPD of KIMSHEALTH, Thiruvananthapuram. Samples who satisfied the inclusion criteria were selected using the consecutive sampling technique. Data were collected after obtaining consent and assent from the participants. The pilot study was found to be feasible, and the tools were found to be executable.

Data Collection Process

After obtaining ethical clearance from the Institutional Review Board on 21st June 2024 (KIMS/CON/SYN/73/2024) and permission from KIMSHEALTH, Thiruvananthapuram, data were collected from 03.02.2025 to 28.02.2025 using purposive sampling. Informed consent was obtained from mothers of school-age children using smartphones. Parental phubbing was assessed using the Phubbing Scale, and children's behavioral risk was measured using SAEBRS. An information booklet on parental phubbing and its effects was provided after data collection.

Plan for Data Analysis

- The data were analyzed in terms of objective of the study using descriptive and inferential statistics.
- Descriptive statistics, such as frequency and percentage, were used to describe socio-personal variables and parental phubbing.
- Inferential statistics, such as Karl Pearson's correlation coefficient, were used to determine the correlation between parental phubbing and behavioral problems of school-going children, and the chi-square test was used to find the association between parental phubbing and selected socio-personal variables.

Analysis and Interpretation

The findings of the study were analysed based on the objectives of the study and are grouped under the following sections.

Section 1: Distribution of mothers of school-age children based on socio-personal characteristics.

Section 2: Distribution of mothers of school-age children based on parental phubbing.

Section 3: Risk for child's behavioral problems secondary to parental phubbing.

Section 4: Correlation between parental phubbing and risk for child's behavioral problems.

Section 5: Association between parental phubbing and selected socio-personal variables.

Results

This section presents the findings drawn from the main study. Data collection and analysis were carried out based on the objectives of the study.

Objectives

- Assess parental phubbing among mothers of school-age children using Spanish version of phubbing scale.
- Assess the risk for child's behavioral problems secondary to parental phubbing using Social, Academic, and Emotional Behavior Risk Screener (SAEBRS).
- Find out the correlation between parental phubbing and risk for child's behavioral problems.
- Find out the association between parental phubbing and selected socio-personal variables.
- Prepare a booklet regarding awareness on parental phubbing and risk for child's behavioral problems.

Hypothesis

- **H1:** There is significant correlation between Parental Phubbing and behavioral problems of the child
- **H2:** There is significant association between parental phubbing and selected socio-personal variables such as age of mother, marital status, number of children, education, occupation, type of family, age group of children, frequently used digital device, frequently used mobile app and duration of mobile usage.

Findings of the Study

Findings of the study are presented under the following sections

Section 1: Distribution of mothers of school age children based on socio-personal characteristics.

The following are the major findings of the study.

- Among the mothers of school age children 34% of the participants were 36-40 years old.
- The majority (97.5%) of the study participants were married (Legally married and living with spouse)
- The majority(65%) of the study participants have two children.
- 45.83% of the study participants were graduates.
- 45.83% of the study participants were unemployed.
- The majority (62%) of the study participants belongs to nuclear family.
- 38% of the study participants have children aged 6-7 years.
- The majority (96.67%) of the study participants were used smart phones frequently.
- The majority (69.17%) of the study participants were used WhatsApp mobile app frequently.
- Most (58%) of the study participants used a smartphone for 1-3 hours per day.

Section 2: Distribution of mothers of school age children based on parental phubbing.

Among the study participants, 63.3% of the study participant had moderate phubbing and about 34.2% had severe phubbing.

Section 3: Risk for child's behavioral problems secondary to parental phubbing.

The findings show that 74.2% of children were at risk for developing social behavioral problems, 62.5% were at risk for developing academic behavioral problems, 90.8% were at risk for developing

emotional behavioral problems, and 77.5% were at risk for developing behavioral problems in school-going children. The mean score of total behavioral problems secondary to phubbing is 29.28 with a standard deviation of 8.738. Therefore, the result shows that there is a risk for developing child behavioral problems secondary to parental phubbing using the Social, Academic, and Emotional Behavior Risk Screener (SAEBRS).

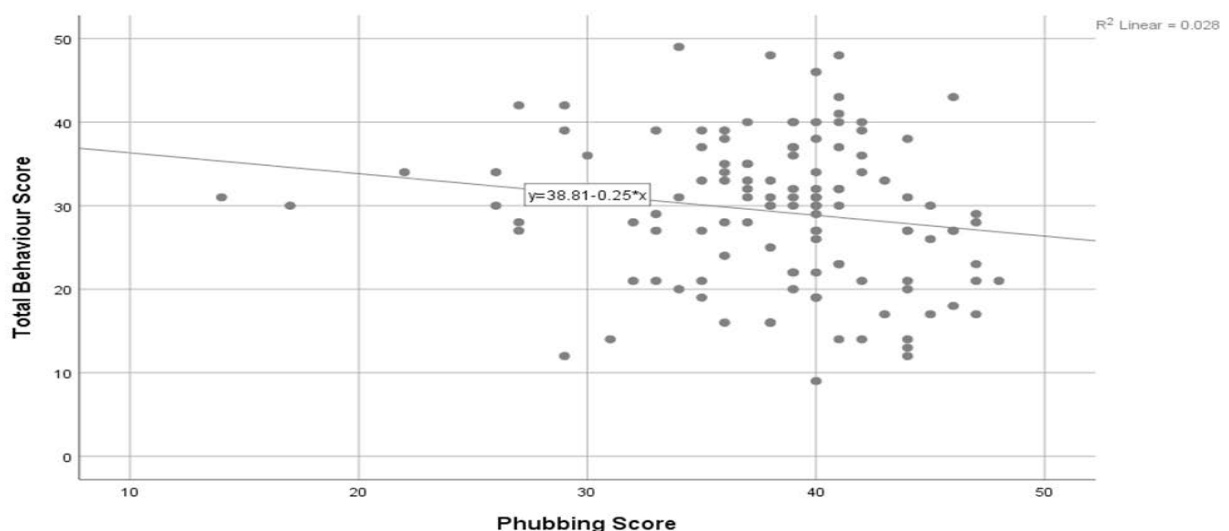
	Mean	Median	SD
Social Behaviour Score	9.62	10.00	3.584
Academic Behaviour Score	8.35	9.00	3.302
Emotional Behaviour Score	11.28	11.00	4.241
Total Behaviour Score	29.28	30.00	8.738

Section 4: Correlation between parental phubbing and risk for child's behavioral problems.

	Pearson Correlation Co-efficient	Sig. (2-tailed)
Social Behaviour Score	-0.276	0.002
Academic Behaviour Score	-0.073	0.426
Emotional Behaviour Score	-0.073	0.427
Total Behaviour Score	-0.168	0.066

There is statistically significant negative correlation between parental phubbing and child's behavior ($r = -0.168$).

- There is statistically significant negative correlation between parental phubbing and the risk for child's behavioral problems



Section 5: Association between parental phubbing and selected socio-personal variables.

- The result shows that a statistically significant association was found between phubbing and the age of the mother ($\chi^2 = 14.332$, $p < 0.05$), number of children ($\chi^2 = 28.746$, $p < 0.05$), education ($\chi^2 = 22.046$, $p < 0.05$), type of family ($\chi^2 = 7.178$, $p < 0.05$), and usage of phone ($\chi^2 = 20.007$, $p < 0.05$)
- There is statistically no significant association between phubbing and the marital status ($\chi^2 = 1.465$, $p > 0.05$), occupation ($\chi^2 = 4.537$, $p > 0.05$), the age group of children ($\chi^2 = 3.290$, $p > 0.05$), frequently used digital device ($\chi^2 = 0.294$, $p > 0.05$) and frequently used mobile app ($\chi^2 = 3.394$, $p > 0.05$). Hence null hypothesis (H_{02b} , H_{02c} , H_{02g} , H_{02h} and H_{02i}) is accepted.

Discussion

The study shows widespread moderate-to-severe phubbing among mothers, which significantly increases the risk of emotional, social, and behavioral difficulties in their children. Parental inattention due to persistent phone use disrupts bonding, reduces emotional availability, and may contribute to behavioral challenges. The findings emphasize the impact of digital distraction on child development and the importance of mindful parenting.

This section discusses the results obtained from the statistical analysis of the data based on the objectives and hypotheses.

The first objective of the study was to assess parental phubbing among mothers of school-age children using Spanish version of the phubbing scale. In the present study 63.3% of the study participant had moderate phubbing, 34.2% had severe phubbing and 2.5% had mild phubbing.

The present study findings are supported by a cross-sectional correlational study conducted among 340 mothers of hospitalized infants in a training and research hospital in Corum (March–September 2023). Using the Generic Scale of Phubbing and the Self-Perception of Parental Scale, the study found that mothers spent an average of 6.86 ± 1.64 hours per day on social media. Increased maternal phubbing was associated with a decreased perception of competence in the parenting role.¹³

The second objective was to assess the risk of children's behavioral problems due to parental phubbing using SAEBRS. Results showed that 74.2% of children were at risk for social problems, 62.5% for academic problems, 90.8% for emotional problems, and 77.5% overall. The mean score was 29.28 ± 8.738 , indicating a significant risk of behavioral problems associated with parental phubbing.

The present study findings are supported by the findings from a study conducted in China to evaluate the association between mother phubbing and children's emotional and behavioral issues, as well as the mediating function of mother-child

attachment. The study found a substantial and positive association between mother phubbing and children's emotional and behavioral problems ($\beta = 0.19$, $p < 0.001$, 95% CI [0.13, 0.25]).¹⁴

The third objective of the present study was to find the correlation between parental phubbing and the risk for child's behavioral problems. The result showed that there is statistically significant negative correlation between parental phubbing and child's behavior, which implies, the lesser the phubbing, the better the child's total behavior.

The present study findings are supported by a large study conducted among 56,275 children in China, which examined parental phubbing and children's social-emotional adjustment. The study found that parental phubbing was negatively correlated with children's self-concept and social-emotional competence, and positively correlated with internalizing problems (e.g., anxiety, depression) and externalizing problems (e.g., aggression, hyperactivity), indicating its adverse impact on children's overall development.¹⁵

The present study findings are also supported by the findings of another cross-sectional study conducted among 614 adolescents from two middle schools in Central China from May to June 2022 during Covid-19 pandemic situation to assess the correlation between parental phubbing and adolescent depressive symptoms. The study revealed that Parental phubbing was negatively correlated with the parent-child relationship ($\beta = -0.40$, $p < 0.001$) and self-concept clarity ($\beta = 0.17$, $p < 0.01$), while it was positively correlated with depressive symptoms ($\beta = 0.12$, $p < 0.001$).¹⁶

The fourth objective was to determine the association between parental phubbing and selected socio-personal variables using the chi-square test. The results showed a statistically significant association between parental phubbing and variables such as mother's age ($\chi^2 = 14.332$), number of children ($\chi^2 = 28.746$), education ($\chi^2 = 22.046$), type of family ($\chi^2 = 7.178$), and phone usage ($\chi^2 = 20.007$) ($p < 0.05$).

The study examined the association between parental phubbing and socio-personal variables such

as age, education, family type, number of children, and phone usage. Significant associations were found with mother's age, number of children, education, family type, and phone use. Limited existing research highlights the novelty of this study and the need to explore how socio-personal factors influence parental phubbing.

These results could be pioneering for further studies that seek to identify the underlying causes and create remedies to address parental phubbing. The relations obtained in this study needs to be confirmed and expanded upon by other research using larger samples and in a variety of populations.

Conclusion

Parental phubbing is highly prevalent among mothers of school-age children and poses a substantial behavioural risk (77.5%) to children. Promoting digital hygiene, limiting unnecessary phone use, and encouraging mindful parent-child interactions are essential to reduce adverse developmental effects.

The present study was designed to assess parental phubbing among mothers of school-age children and its risk for children's behavioral problems. The study concludes that moderate to severe phubbing is prevalent among mothers or parents of school-age children, which in turn contributes to progressive behavioral problems in children. Therefore, strategies should be devised to address issues in the younger generation caused by digital distractions and to help them adapt constructively to life situations for a better future.

Policy Implications

Nursing Implications

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

Nursing Practice

- Nurses, especially those in mental health, child health, and community health nursing, can assess parent-child interactions during routine checkups.

- Counsel mothers on the importance of mindful parenting and being emotionally present for their children.

Nursing Education

- Incorporate the topic of digital behavior and family dynamics into the curricula of mental health nursing, child health nursing, and community health nursing.
- Educate nursing students on recognizing early behavioral signs in children that may be linked to parental neglect or inattention.

Nursing Administration

- Public health nurse administrators could implement awareness programs and parenting workshops in hospital and community settings, focusing on responsible digital behavior.
- Encourage administrative policies that support family-centered care, where nurses engage both parents in discussions about child health and behavior.
- educators to manage behavioral problems linked to family dynamics.

Nursing Research

- Evidence-based research activities should be emphasized to identify and manage parental phubbing and its impact on the behavioral and emotional problems of adolescents and children.

Limitations

- Underreporting of phubbing may occur among mothers due to social desirability bias.

Scope for Future Studies

- The present study could be replicated by using direct observation of behavioral and emotional deviations of children, rather than parental response.

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Conflict of Interest Statements: This study has no conflict of interest

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A Study to Assess the Effectiveness of Medicated Sitz bath on Episiotomy Healing of Postnatal Mothers

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Abstract

Background: Episiotomy pain and delayed wound healing can interfere with the daily activities and comfort of postnatal mothers. Effective, low-cost nursing interventions are needed to promote healing and prevent complications.

Objectives: To evaluate the effectiveness of a medicated sitz bath on episiotomy wound healing among postnatal mothers.

To determine the association between pre-test episiotomy healing scores and selected demographic variables.

Methods: A quasi-experimental pre-test and post-test control group design was adopted. The study was conducted among 60 postnatal mothers who had normal vaginal delivery with episiotomy at a selected hospital in Kollam. Purposive sampling was used to assign 30 mothers to the experimental group and 30 to the control group. Episiotomy wound healing was assessed using the REEDA scale. The experimental group received medicated sitz bath twice daily for three days, while the control group received routine perineal care. Data were analyzed using descriptive and inferential statistics, including the Mann-Whitney U test.

Results: The pre-test mean REEDA score in the experimental group was 1.53 (SD = 1.57), which reduced to 0.27 (SD = 0.58) in the post-test, indicating significant improvement in wound healing. The Mann-Whitney U test showed a statistically significant difference between the experimental and control groups ($Z = 6.18, p < 0.01$).

Conclusion: Medicated sitz bath was found to be an effective, simple, and economical intervention for promoting episiotomy wound healing among postnatal mothers. It can be safely incorporated into routine postnatal care to enhance recovery and prevent complications.

Keywords: Episiotomy, Medicated Sitz Bath, Postnatal Mothers, Wound Healing, Nursing Care

Introduction

Background of the Problem

During this period a mother is going through the physiological process of uterine involution and at

the same time adapting to her new role in the family. Episiotomy pain often interferes with basic daily activities for the woman such as walking, sitting, and passing urine and also negatively impacts on motherhood experiences like taking care of newborn.¹

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Episiotomy did not become common until the early 1900s when the shift from home to hospital delivery. The use of episiotomy was expanded in 1921. The statistics show that an episiotomy was performed for 14.9% of vaginal births, with the highest rate being recorded in Victoria (20.5%). A combined laceration and episiotomy occurs in 1.6% of women who had vaginal birth, giving a total of 16.6% (statistics from Australia's mothers and babies 2006 report). In 1742, recommended the procedure for those cases in which the external vaginal opening is so tight that labour is dangerously prolonged².

Episiotomy was not widely used until the 1920s. In addition to the strong advocacy for the use of episiotomy of the day, changes in maternity practices also affected the use of episiotomy. The shift from home birth to hospital deliveries contributed to a shift in the conceptualization of the nature of childbirth. This shift made Episiotomy as a common surgical procedure performed during second stage of labour to enlarge the vaginal introitus and to shorten the second stage of labour in cases of fetal distress. Episiotomy is protective against more severe perineal lacerations³.

Considerable evidences of risks are also associated with episiotomy such as pain, edema, infection, and ultimately dyspareunia. However, appropriate treatment can resolve or reverse all these after effects. The prompt use of the best selected treatment for any injury including, an episiotomy, ensures it will heal completely, in the shortest possible time, with the least amount of complications. So midwives have an important role to play in the care of perineal wounds following child birth. The maintenance of effective pain relief must be balanced with the need to promote wound healing.

There are several treatments for relieving perineal pain and promoting wound healing. Pharmacological and non-pharmacological methods are used to treat this discomfort. Pharmacological pain relief methods include non-steroidal anti-inflammatory drugs, oral analgesics, local anaesthetics and opioids. But this method is associated with serious adverse effects such as constipation, gastric irritation, passage of the drug to maternal milk, and prolonged bleeding time⁴.

It is vital that health professionals who care for the puerperant patient know how to evaluate and treat perineal pain. Considering the high rates of perineal trauma after normal deliveries that still exist in our population, it is necessary to offer these patients alternative treatments for perineal pain & wound healing based on scientific evidence.

Sitzbath is a simple and cost effective and easy method of treating episiotomy wound in the hospital as well as home settings. As it takes less time, sitzbath is not a routine practice in our Obstetrics and Gynecological ward settings in spite of it being cost effective and less time consuming. During this procedure care giver can talk and communicate with the mothers many reduce the fear and may relieve the pain and increase comfort, during the post natal days. The postnatal mothers can even do this independently in the home settings when they get discharged from the hospitals following the delivery⁵.

Need and Significance of The Study

A woman in birth is at once her most powerful, and her most vulnerable. But any women who has birthed unhindered understands that they are stronger than they know. The onset of motherhood presents a unique set of physical, emotional and psychological challenges. The post-partum phase can become even more challenging when the new mother experiences perineal or genital tract trauma as a result of child birth⁶.

The world health organization has taken a clear stand against routine episiotomy. The episiotomy infections are preventable and can be reduced by practicing clean delivery and effective postnatal care. Midwives have an important role in the care of episiotomy wound after child births (WHO statistics, 2007)⁷.

In India, the overall rate of episiotomy was 40.6%. Among that midwives performed episiotomies at a lower rate (21.4%) than faculty (33.3%) and private providers (55.6%)⁸. The episiotomy rate in Karnataka is approximately 88% in women who are undergoing difficult labour. In Bangalore rates of

episiotomy for vaginal birth range from 31% to 95% of the grand total of 3590 vaginal deliveries⁹.

Materials and Methods

Research Approach

A quantitative approach was considered an appropriate research approach for the present study regarding the effectiveness of medicated sitzbath on episiotomy healing of postnatal mothers.

Research Design

The research design selected for the present study was quasi experimental with pre-test and post-test design to achieve the objectives of the study.

Variables

Two types of variables are used in this study. They are:

Independent variable:-Medicated sitzbath.

Dependent variable: -Episiotomy healing of postnatal mothers

Setting of the study : The study subjects were selected from Victoria Hospital, Kollam.

Population : postnatal mothers who had normal vaginal delivery with episiotomy.

Sample and Sampling Technique

Sample: Postnatal mothers who had normal vaginal delivery with episiotomy, admitted in postnatal ward of Victoria Hospital, Kollam. The sample size was 60 postnatal mothers who had vaginal delivery divided 30 each in control and experimental group.

Sampling Technique

The purposive sampling was used to collect data from the available samples falling under inclusion criteria. (Purposive sampling was used in this study because the research required participants who met specific clinical criteria, namely postnatal mothers who had undergone normal vaginal delivery with episiotomy. This technique allowed the researcher to deliberately select mothers who possessed the characteristics necessary to evaluate the effectiveness

of the medicated sitz bath on episiotomy wound healing.

In a hospital setting, the number of postnatal mothers with episiotomy at any given time is limited and varies daily. Therefore, probability sampling was not practical. Purposive sampling ensured that only eligible and available participants who fulfilled the inclusion criteria were recruited within the data collection period.

Additionally, this method helped in:

Ensuring homogeneity of the sample with respect to the clinical condition

Facilitating timely data collection within the study duration

Enhancing the feasibility of conducting an intervention-based study in a clinical environment

Thus, purposive sampling was considered appropriate to obtain a relevant and accessible sample for assessing the effectiveness of the medicated sitz bath.)

Inclusion Criteria

Postnatal mothers who are:- having episiotomy, willing to participate in the study, able to follow the instructions.

Exclusion Criteria

Postnatal mothers with:- complications such as Post Partum Hemorrhage and perineal tear.

cardiac diseases, gestational diabetes, eclampsia and other infections.

Data Collection Tools

Data were gathered using two main instruments:

1. Structured Questionnaire

A structured questionnaire was used to obtain baseline information from postnatal mothers. This tool collected data on socio-demographic variables such as age, education, occupation, type of family, and monthly income. Obstetric and clinical variables including parity, type

of delivery, day of episiotomy, and previous knowledge regarding perineal care were also recorded.

2. REEDA Scale

Episiotomy wound healing was assessed using the standardized REEDA Scale, which measures five components: Redness, Edema, Ecchymosis, Discharge, and Approximation of wound edges. Each item was scored on a numerical scale, and the total score indicated the level of wound healing. Lower scores reflected better healing progress. The tool was selected due to its reliability and wide use in postpartum wound assessment.

Validity and Reliability

Content validity of the tools was established through expert review by specialists in obstetrics and gynecological nursing. Necessary modifications were made based on their suggestions to improve clarity and relevance. The REEDA scale is a standardized and previously validated tool, ensuring consistency in measurement. Reliability of the questionnaire was confirmed through pilot testing, which showed the instrument to be clear and feasible.

Pilot Study

A pilot study was conducted among 10 postnatal mothers who met the inclusion criteria to assess the feasibility of the research design and tools. The study confirmed that the instruments were understandable and the procedure for administering the medicated sitz bath was practical in the clinical setting. No major changes were required, and the pilot participants were excluded from the main study.

Ethical Considerations

Formal permission was obtained from the hospital authorities before data collection. Ethical clearance was secured from the institutional ethics committee (No. G-1335/14 dated 16.05.2014 from DMO and 20.06.2014 from institution). Informed

consent was obtained from each participant after explaining the purpose of the study, procedure, and benefits. Privacy and confidentiality were strictly maintained throughout the research. Participants were assured that their involvement was voluntary and that they could withdraw at any time without affecting their care.

Data Collection Procedure

Data collection was carried out in the postnatal ward. Postnatal mothers who fulfilled the inclusion criteria were selected and informed about the study. After obtaining consent, baseline data were collected using the structured questionnaire, and initial episiotomy wound assessment was done using the REEDA scale.

Participants in the experimental group were given medicated sitz bath as per the prescribed protocol for a specified number of days, while the control group received routine perineal care. Follow-up assessments of wound healing were conducted using the REEDA scale to evaluate improvement.

Statistical Analysis

Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe demographic and clinical variables. The Mann-Whitney U Test used to assess significant difference between pretest and posttest wound score. Chi-square test was applied to determine the association between selected demographic variables and wound healing outcomes.

Result

The findings of the study revealed that postnatal mothers who received medicated sitz bath showed a greater reduction in REEDA scores compared to those who received routine care. This indicates improved episiotomy wound healing in the experimental group. Statistical analysis demonstrated a significant difference in post-test wound healing scores between the two groups, confirming the effectiveness of medicated sitz bath.

Table 1. Distribution of samples according to post test score

Distribution of samples according to post test score of episiotomy wound healing (n = 60)	Distribution of samples according to post test score of episiotomy wound healing (n = 60)	Distribution of samples according to post test score of episiotomy wound healing (n = 60)	Distribution of samples according to post test score of episiotomy wound healing (n = 60)	Distribution of samples according to post test score of episiotomy wound healing (n = 60)
Episiotomy wound healing	Experimental	Experimental	Control	Control
Episiotomy wound healing	Frequency	Percent	Frequency	Percent
No infection	24	80.0	2	6.7
Mild infection	6	20.0	26	86.7
Moderate infection	0	0.0	2	6.7

Table 2. Effectiveness of medicated sitz bath on episiotomy healing

		Mean	SD	Median	Z#	P
Pre	Experimental	1.53	1.57	1.00	1.67	0.094
Pre	Control	0.87	1.07	0.00	1.67	0.094
Post	Experimental	0.27	0.58	0.00	6.18**	0.000
Post	Control	2.87	1.57	3.00	6.18**	0.000

Discussion

The present study was undertaken to evaluate the effectiveness of medicated sitz bath on episiotomy wound healing among postnatal mothers. The findings demonstrated a significant reduction in REEDA scores in the experimental group compared to the control group, indicating improved wound healing. The warm medicated solution likely enhanced local blood circulation, reduced edema, and promoted tissue repair. The antiseptic properties of the solution may have contributed to reduced risk of infection.

The study also found that certain demographic variables such as age and occupation showed association with healing outcomes, whereas variables like parity, religion, education, and family type did not show significant association. This suggests that while socio-demographic factors may influence recovery to some extent, appropriate nursing care remains the key determinant of healing.

The findings of the present study are in agreement with previous research that demonstrated the effectiveness of sitz bath therapy in promoting perineal wound healing and reducing discomfort

among postnatal mothers. Studies have reported that warm sitz baths improve local circulation, reduce edema, and accelerate tissue repair in episiotomy wounds.¹⁰

A quasi-experimental study conducted among postnatal mothers found that those who received warm sitz bath showed significantly lower REEDA scores and faster wound healing compared to mothers who received routine perineal care.¹¹ Similar improvements in pain relief and wound approximation were also reported in mothers who practiced medicated sitz bath twice daily during the early postpartum period.¹²

Another clinical study evaluating non-pharmacological interventions for episiotomy care revealed that sitz bath therapy significantly reduced signs of inflammation such as redness and edema, thereby promoting faster healing and enhancing maternal comfort.¹³ These findings support the results of the present study, where the experimental group showed marked improvement in REEDA scores.

In contrast, a few studies have noted that the effectiveness of sitz bath may vary depending on the duration, frequency, and type of solution used. Studies using only plain warm water or shorter intervention periods reported slower improvement when compared to medicated sitz bath regimens.¹⁴ This may explain why the present study, which used a medicated solution twice daily, demonstrated significant healing benefits.

Nursing Implications

Nursing Practice

The findings of the study highlight the importance of medicated sitz bath as a routine nursing intervention for postnatal mothers with episiotomy. Nurses play a key role in promoting perineal hygiene, preventing infection, and facilitating faster wound healing. Regular assessment of the episiotomy site using standardized tools such as the REEDA scale enables early identification of complications. Teaching mothers the correct

method of performing sitz bath at home empowers them in self-care and promotes recovery during the puerperium.

Nursing Administration

Nurse administrators are responsible for ensuring quality maternal care services in healthcare institutions. Based on the study findings, hospital policies can include medicated sitz bath as a standard postnatal care protocol for mothers with episiotomy. Administrators should organize in-service education programs to update staff nurses on evidence-based practices related to episiotomy care. Adequate supplies and facilities for sitz bath should be ensured in postnatal wards to support effective implementation.

Nursing Education

Nursing education programs should emphasize evidence-based, non-pharmacological interventions for postpartum care. Teaching student nurses about the benefits, procedure, and precautions of medicated sitz bath will improve their competency in maternity nursing. Simulation and clinical demonstrations can help learners develop skills in assessing episiotomy wounds and providing appropriate interventions. Continuing education programs can also be conducted for practicing nurses to update their knowledge.

Nursing Research

The study contributes to the growing body of evidence supporting non-pharmacological interventions in postnatal care. Further research can be conducted with larger samples, different settings, and varied durations of sitz bath therapy to strengthen generalization. Comparative studies between medicated sitz bath and other interventions such as cold therapy, infrared therapy, or herbal applications can also be explored. Longitudinal studies may help determine long-term outcomes on wound healing and maternal comfort.

Conclusion

Based on the findings, it can be concluded that medicated sitz bath is an effective intervention for enhancing episiotomy wound healing among postnatal mothers. It significantly reduces signs of inflammation and promotes faster tissue repair as evidenced by lower REEDA scores in the experimental group. The procedure is simple, economical, and can be safely practiced both in hospital and at home under proper guidance. Incorporating medicated sitz bath into routine postnatal care can improve maternal comfort, reduce complications, and enhance overall recovery during the puerperium.

Limitations

The study was limited to a small sample size of postnatal mothers from a single hospital.

The duration of intervention was restricted to a short period, which may not reflect long-term healing outcomes.

Environmental and personal hygiene practices at home could not be fully controlled.

Recommendations

Similar studies can be conducted with a larger sample size for better generalization.

Future research may evaluate the effectiveness of medicated sitz bath over a longer duration.

Comparative studies can be done between medicated and non-medicated sitz baths.

Studies can be replicated in different hospital and community settings.

Research can explore the effect of sitz bath on pain relief and maternal comfort in addition to wound healing.

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Conflict of Interest: There are no conflicts of interest to declare in this study.

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Prevalence and Determinants of Obesity and the Impact of an Educational Intervention on Obesity Management Knowledge among Adolescents in Selected Salem Schools

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Abstract

A Study was done to assess the prevalence and associated factors of obesity and evaluate the effectiveness of an educational package on knowledge regarding obesity Management among Obese Adolescents in selected Schools, Salem. The subjects were adolescents, who are studying in 8th and 9th standard aged 13 and 14 years. Non Experimental Descriptive Survey and Quasi Experimental Research Design were used for the phase -I & phase-II respectively. During phase-I, based on BMI calculation prevalence of obese adolescents were identified and as 30 subjects for experimental and control group. Using rating scale the associated factors of obesity were assessed and closed ended questionnaire was used to assess the knowledge regarding obesity management. The results of phase-I shows that majority 22(73%) of them had moderate risk of obesity. The results of phase II reveal the estimated 't' value is 13.47 is significantly higher than table value 3.46 at $p \leq 0.001$ level. Hence the Educational Interventional Package is significantly effective in gaining adequate knowledge regarding obesity management among obese adolescents in experimental group and control group. Also study results showed there was a significant association between gender and the post-test scores on knowledge regarding obesity management among obese adolescents in experimental group at $p \leq 0.05$ level.

Key words: Prevalence, Associated factors, Educational Interventional Package, Obese Adolescents, Obesity, Obesity Management.

Introduction

Overweight and Obesity are defined as abnormal or excessive body fat accumulation that presents a risk to health. Overweight and Obesity among adolescents have emerged as one of the most serious public health concerns in the 21st century⁷. The magnitude and the severity of this problem are reached at an alarming rate and more than quadrupled in the past three decades in adolescents.¹⁰

Overweight and obesity in adolescents can be assessed using body mass index (BMI) cut-off points of World Health Organization (WHO), Communicable Disease Control (CDC), and International Obesity Task Force (IOTF)². Owing to lifestyle changes, such as balanced organic foods to processed foods, more cell phone and television use, a more sedentary lifestyle and a decrease in physical activity may be risk factors for teenage obesity.¹³

Adolescent overweight and obesity are critical which strongly track into adulthood and having a great chance to develop non-communicable diseases like type 2 diabetes mellitus and cardiovascular diseases.(WHO, 2010)¹⁵. Morbidity from cardiovascular disease, diabetes, cancers and arthritis because of obesity was 50-100% higher among obese individuals suffering childhood or teenage obesity.⁶

Need For The Study

Childhood obesity affects both developed and developing countries of all socio-economic groups, irrespective of age, sex or ethnicity. More than 1 billion people worldwide are obese – 650 million adults, 340 million adolescence and 390 million children. WHO estimates that by 2025, approximately 167 million people – adult and children will become less healthy because they are overweight or obese.¹⁷ The rate of obesity among the world's children and adolescents in 2022 is four times higher that it was in 1990. Four million people die each year as a result of obesity.¹⁶

The number of obese children in India increased dramatically, 12.5 million of those between the ages of 5-19 being obese in 2022 compared to 0.4 million in 1990. 5.3 million of the 12.5 were boys and 5.2 million were girls.¹⁴The total prevalence of overweight and obesity were 23.9% among adolescents in India.¹²

Based on the WHO, UNICEF and Non Communicable Diseases Risk factor Collaboration (NCD-RisC) data, World Obesity Federation (WOF) published the first global atlas on childhood obesity in 2019, providing the latest estimates of infant, childhood and adolescent obesity in 191 countries.⁴

By 2050 it is estimated that 60% of males and 50 % of females will be obese. The current trend shows that around 80% of 10-14 year olds will become obese adults. Some estimates tag the prevalence of obesity among Indian children aged 5-19 years at between 3.6 and 11.7%. It is predicted that by 2025, there will be 17 million obese children in India. Urbanization is the single most important factor

linked to obesity in India. Epigenetic, dietary, familial, psychosocial, parental education and parental occupation are other important factors.¹¹

Objectives

1. To assess the prevalence of obesity among adolescents in experimental and control group.
2. To assess the associated factors of obesity among obese adolescents in experimental and control group.
3. To assess the knowledge regarding obesity management among obese adolescents in experimental and control group.
4. To evaluate the effectiveness of an educational interventional package on level of knowledge regarding obesity management among obese adolescents in experimental group.
5. To find out the association between the pre-test, post-test scores on knowledge regarding obesity management and their selected demographic variables among obese adolescents in experimental and control group.

Hypothesis

H₁: There is a significant difference between pre-test and post-test scores on knowledge regarding obesity management among obese adolescents in experimental group at $P \leq 0.05$ level.

H₂: There is a significant difference between post-test scores on knowledge regarding obesity management among obese adolescents in experimental and control group at $P \leq 0.05$ level.

H₃: There is a significant association between pre-test scores on knowledge regarding obesity management among obese adolescents and their selected demographic variables in experimental and control group at $P \leq 0.05$ level.

H₄: There is a significant association between post-test scores on knowledge regarding obesity management among obese adolescents and their selected demographic variables in experimental and control group at $P \leq 0.05$ level.

Research Methodology: (Materials and Methods)

Quantitative Research Approach was used among adolescents who are studying in 8th and 9th standard aged 13 and 14 years. The research design was a Non Experimental Descriptive Survey for phase-I by using convenient sampling technique and a Quasi Experimental Research Design for phase-II by using purposive sampling technique. The study was conducted in Sri Vidhya Bharathi Matriculation higher secondary school, Salem for experimental group (N=155) and Sri Vidya Mandir higher secondary school, Salem for control group (N=123). Tool had demographic variables, assessment of level of obesity based on BMI, Rating scale to assess the associated factors of obesity and closed ended structured questionnaire for knowledge assessment.

Ethical clearance was obtained from Institutional ethical committee (Ref No: IECSGH/2024/13) and also obtained permission from the head of the school and from the participants. The data was collected over 4 weeks. In phase-I, BMI was calculated and adolescents who were overweight and obese, 30 subjects in experimental and control group respectively were selected. In Phase -II initially using a rating scale the associated factors of obesity were assessed using 17 statements were designed to assess adolescent practice for past one month. Following a pre-test, Educational Interventional Package on obesity management was taught to the experimental group using PowerPoint, for every 5 adolescents in a group with the duration of 40 minutes. After 7 days of intervention, post-test was conducted.

Data Analysis and Interpretation

Table 1. Distribution of adolescents according to BMI in experimental and control group.

BMI Classification	Experimental group (N =155)		Control group (N = 123)	
	f	%	f	%
Underweight	76	49	36	29.2
Normal	48	30.9	57	46.3
Overweight	19	12.2	21	17
Obese	12	7.7	9	7.3

Table 2. Frequency and percentage distribution of obese adolescents according to their demographic variables in experimental and control group. n=60

Si. No	Demographic variables		Experimental group n=30		Control group n=30	
			f	%	f	%
1.	Age in years	a) 13	8	26.6	8	26.6
		b) 14	22	73.3	22	73.3
2.	Gender	a) Male	14	46.6	17	56.6
		b) Female	16	53.3	13	43.3

Continue....

3.	Year of studying	a) 8 th standard	11	36.6	14	46.6
		b) 9 th standard	19	63.3	16	53.3
4.	Type of family	a) Nuclear	16	53.3	19	63.3
		b) Joint	14	46.6	11	36.6
5.	Birth order	a) First	14	46.6	12	40
		b) Second	15	50	16	53.3
		c) Third and above	1	3.3	2	6.6
6.	Religion	a) Hindu	30	100	25	83.3
		b) Muslim	-	-	3	10
		c) Christian	-	-	2	6.6
		d) Others	-	-	-	-
7.	Place of residence	a) Urban	16	53.3	18	60
		b) Rural	14	46.6	12	40
8.	Dietary habits	a) Vegetarian	2	6.6	3	10
		b) Non vegetarian	-	93.3	-	-
		c) Both	28		27	90
9	Previous knowledge	a) Yes	9	30	7	23.3
		b) No	21	70	23	76.6
9.1	If yes,source of information	a) Family member	5	55.5	3	42.8
		b) Teacher	2	22.2	1	14.2
		c) Health personnel	1	11.1	-	-
		d) Mass media	1	11.1	3	42.8
		e) Peer group	-	-	-	-

Table 3. Frequency and percentage distribution of obese adolescents according to their health related variables in experimental and control group. **n=60**

Si. No	Demographic variables		Experimental group n=30		Control group n=30	
			f	%	F	%
10.	Suffering from any chronic illness	a) Yes	3	10	3	10
		b) No	27	90	27	90

Continue....

10.1	If yes, mention	a) Type 2 DM / hypertension/ heart disease	2	66.6	1	33.3
			1	33.3	1	33.3
		b) PCOD	-	-	-	-
		c) Thyroid dysfunction	-	-	1	33.3
		d) Others				
11.	Taking regular medication for any illness	a) Yes	3	10	3	10
		b) No	27	90	27	90
11.1	If yes, mention what is the medication	a) Steroids	-	-	1	33.3
		b) Antidepressant	-	-	-	-
		c) Anti-epileptic	-	-	-	-
		d) Insulin	2	66.6	1	33.3
		e) Hormone supplement	1	33.3	1	33.3

Table 4. Frequency and percentage distribution of obese adolescents according to their parent related variables in experimental and control group. n=60

Si. No	Demographic variables		Experimental group n=30				Control group n=30			
			f		%		f		%	
12	Parent's education		Father		Mother		Father		Mother	
			f	%	f	%	f	%	F	%
		a) No formal education								
		b) Primary education								
		c) Secondary education	-	-	-	-	-	-	-	-
		d) Higher secondary education	4	13.3	3	10	3	10	1	3.3
		e) Diploma/graduate	10	33.3	8	26.6	5	16.6	15	50
		f) Post graduate	8	26.6	10	33.3	9	30	5	16.6
13	Parent's occupation		7	23.3	6	20	12	40	7	23.3
			-	3.3	3	10	1	3.3	2	6.6
		a) Government employee	4	13.3	1	3.3	8	26.6	2	6.6
		b) Private employee	6	20	2	6.6	8	26.6	1	3.3
		c) Farmer	2	6.6	-	-	1	3.3	-	-
		d) Self employee	17	56.6	5	16.6	10	33.3	5	16.6
		e) Labour	1	3.3	-	-	3	10	1	3.3
		f) Unemployed/Homemaker	-	-	22	73.3	-	-	21	70

Continue....

14.	Family history of obesity	a) Yes				
		b) No	23	76.6	17	56.6
15.	Family monthly income		7	23.3	13	43.3
		a) Rs.≥20482	22	73.3	23	76.6
		b) Rs.10241 -20481	8	26.6	7	23.3
		c) Rs.7681-10240	-	-	-	-
		d) Rs.5120-7680	-	-	-	-
		e) Rs.3072-5119	-	-	-	-
		f) Rs.1034-3071	-	-	-	-
		g) Rs.≤1033	-	-	-	-

Table 5. Frequency and percentage distribution of obese adolescents according to their diet related associated factors of obesity in experimental and control group. n=60

Si.no	Associated factors	Experimental group						Control group					
		Never		Sometimes		Always		Never		Sometimes		Always	
		f	%	f	%	f	%	f	%	f	%	F	%
1	I eat more than 3 meals per day.	4	13	20	67	6	20	6	20	18	60	6	20
2	I skip breakfast daily.	8	27	16	53	6	20	7	23	18	60	5	17
3	I skip lunch daily.	19	63	11	37	-	-	24	80	6	20	-	-
4	I skip dinner daily.	13	43	17	57	-	-	18	60	12	40	-	-
5	I consume meat more than 3 times per week.	22	73	8	27	-	-	23	77	7	23	-	-
6	I consume snack daily.	3	10	22	73	5	17	1	3.3	15	50	14	47
7	I consume sweet more than 2 times per week.	6	20	20	67	4	13	6	20	19	63	5	17

Continue....

8	I consume vegetables and fruits daily.	-	-	14	47	16	53	1	3.3	9	30	20	67
9	I consume carbonated sweetened drinks daily.	10	33	17	57	3	10	5	17	23	77	2	7
10	I eat junk food daily.	3	10	26	87	1	3	2	7	27	90	1	3

Table 6. Frequency and percentage distribution of obese adolescents according to their physical activity related associated factors of obesity in experimental and control group. n=60

Si. No	Associated factors	Experimental group						Control group					
		Never		Sometimes		Always		Never		Sometimes		Always	
		f	%	f	%	f	%	f	%	f	%	F	%
11	I spend more than 2 hours per day on screen time like TV, phone, video games and computer.	-	-	21	70	9	30	-	-	14	47	16	53
12	I go to school by cycle or walk.	29	96	1	3	-	-	25	83	1	3	4	13
13	I sleep more than 10 hours/day.	14	47	16	53	-	-	13	43	16	53	1	3
14	I have the habit of watching TV while eating daily.	-	-	8	27	22	73	-	-	12	40	18	60
15	I engage in regular physical exercise at home everyday.	7	23	16	53	7	23	10	33	16	53	4	13
16	I have physical work besides my education everyday.	2	7	6	20	22	73	1	3	13	43	16	53
17	I play outdoor games daily.	2	7	20	67	8	27	5	17	20	67	5	16

Table-7. Frequency and percentage distribution of obese adolescents based on scores of associated factors of obesity according to their level of risk in experimental and control group. n= 60

Risk level of obesity	Score	Experimental group n = 30		Control group n = 30	
		F	%	f	%
Low risk of obesity	1-17	-	-	-	-
Moderate risk of obesity	18-34	22	73	22	73
High risk of obesity	35-51	8	27	8	27

The results of phase-I shows that the risk level of obesity in both groups were having similar high percentage, 22(73%) of them had moderate risk of obesity, 8 (27%) of them had high risk of obesity and none of them had low risk of obesity.

Risk level of obesity was assessed using a researcher-developed rating scale consisting of 17 statements was used to assess adolescents' practices over the past month

Table 8. Frequency and percentage distribution of obese adolescents regarding obesity management according to their pre-test scores on knowledge in experimental and control group. n=60

Level of knowledge	Score	Experimental group n = 30		Control group n = 30	
		F	%	f	%
Inadequate knowledge	0-8	19	63	15	50
Moderately adequate knowledge	9-16	11	37	15	50
Adequate knowledge	17-25	-	-	-	-

a) Distribution of obese adolescents to their post-test scores on knowledge regarding obesity management in experimental and control group.

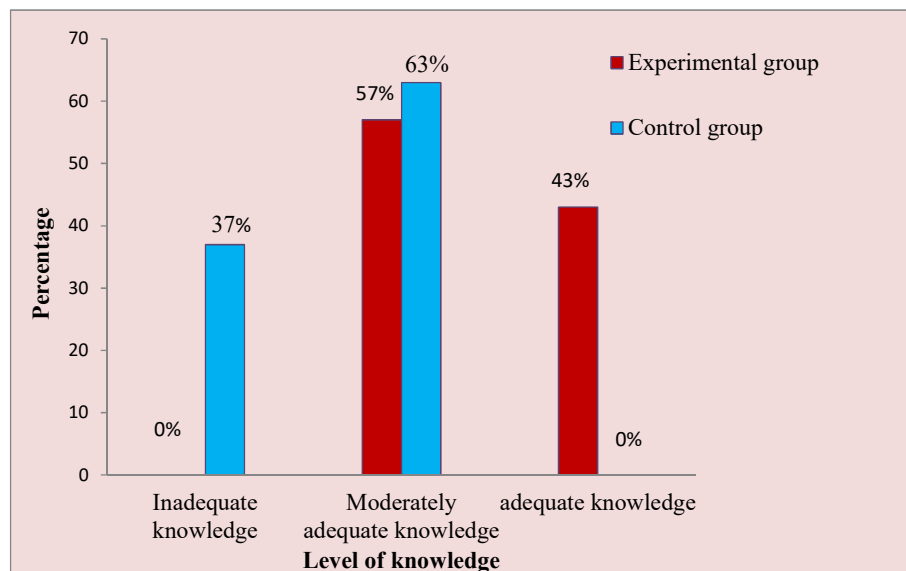
**Figure 1: Percentage distribution of obese adolescents according to their post-test scores on knowledge regarding obesity management.**

Table 9. Comparison of area wise mean, SD, mean difference and difference in mean percentage of pre-test and post-test scores on knowledge among obese adolescents in experimental group. n = 30

Si. No	Area of Knowledge	Max Score	Pre-test			Post-test			Difference in mean%
			Mean	SD	Mean%	Mean	SD	Mean %	
1.	Definition & BMI	4	1.7	0.6	42.5	2.8	0.8	70	27.5
2.	Causes of Obesity	2	0.6	0.6	30	1.2	0.6	60	30
3.	Dietary Management	12	4	1.2	33.3	6.9	1.6	57.5	24.2
4.	Non-dietary management	6	1.06	0.7	17.6	3.7	1.3	61.6	44
5.	Impact of obesity	1	0.4	0.5	40	0.8	0.3	80	40
	Total	25	7.76	3.6	30.8	15.4	4.6	61.6	30.8
	Overall	25	8	1.5	32	15.6	3	62.4	30.4

Table 10. Mean, SD, mean percentage and difference in mean percentage according to their pre-test and post-test scores on knowledge regarding obesity management among obese adolescents in experimental and control group. n=60

Si. No	Groups	Pre-test			Post-test			Difference in Mean %
		Mean	SD	Mean %	Mean	SD	Mean %	
1.	Experimental group	8	1.5	32	15.6	3	62.4	30.4
2.	Control group	8.5	1.3	34	9.4	1.5	37.6	3.6

Table 11. Mean, SD and paired 't' value on pre-test and post-test scores on knowledge regarding obesity management among obese adolescents in experimental group. n = 30

Si. No	Experimental group	Max score	Mean	SD	Mean Difference	df	't' Value	Table value
1.	Pre-test	25	8	1.5	7.6	29	15.2*	3.66
2.	Post-test		15.6	3				

*Highly significant at p≤0.001 level

The above table shows that, in experimental group, pre test mean score of knowledge is 8 ± 1.5 and post test mean score of knowledge is 15.5 ± 3 with a mean difference of 7.6. The estimated paired 't' value is 15.2 which is significantly higher than the table value 3.66 at $p \leq 0.001$ level.

Hence, it shows that Educational Interventional Package was significantly effective in gaining adequate knowledge regarding obesity management among obese adolescents in experimental group. Therefore, hypothesis H_1 is retained at $p \leq 0.001$ level.

Table 12. Mean, SD and independent 't' value on post-test scores on knowledge regarding obesity management among obese adolescents in experimental and control group. n = 60

Si. No	Group	Post test		df	't' value	Table value
		Mean	SD			
1.	Experimental group	15.6	3	58	13.47*	3.46
2.	Control group	9.4	1.5			

*Highly significant at $p \leq 0.001$ level.

The above table shows that, in experimental group, post test mean score of knowledge is 15.6 ± 3 and in control group, post test mean score of knowledge is 9.4 ± 1.5 . The estimated 't' value is 13.47 is significantly higher than table value 3.46

at $p \leq 0.001$ level. Hence, it shows that Educational Interventional Package was significantly effective in gaining adequate knowledge regarding obesity management among obese adolescents in experimental group and control group. Therefore, hypothesis H_2 is retained at $p \leq 0.001$ level.

Table 13. Association between the pretest scores on knowledge regarding obesity management among obese adolescents and their selected demographic variables in experimental and control group. n = 60

Si. No	Demographic variables	Experimental group (n = 30)			Control group (n = 30)		
		Df	χ^2	Table Value	Df	χ^2	Table Value
1.	Age in years	2	0.22	5.99	2	1.52	5.99
2.	Gender	2	0.06	5.99	2	0	5.99
3.	Years of studying	2	0.18	5.99	2	0.12	5.99
4.	Place of residence	2	0.06	5.99	2	1.24	5.99
5.	Dietary habits	2	0.13	5.99	2	0	5.99
6.	Suffering from chronic illness	2	0.23	5.99	2	0	5.99
7.	Taking regular medication for any illness	2	0.23	5.99	2	0	5.99
8.	Previous knowledge regarding obesity	2	0.02	5.99	2	0	5.99
9.	Family history of obesity	2	0.87	5.99	2	0	5.99
10.	Family monthly income	1	1.54	3.84	1	0	3.84

*significant at $p \leq 0.05$ level.

Table 12 shows that there is no significant association between the pre test scores of knowledge regarding obesity management among obese

adolescents and their selected demographic variables in experimental and control group. Hence, hypothesis H_3 is rejected at $p \leq 0.05$ level.

Table 14. Association between the post-test scores on knowledge regarding obesity management among obese adolescents and their selected demographic variables in experimental and control group. n = 60

Si. No	Demographic variables	Experimental group (n = 30)			Control group (n = 30)		
		df	χ^2	Table value	Df	χ^2	Table value
1.	Age in years	2	2.94	5.99	2	0.14	5.99
2.	Gender	2	6.91*	5.99	2	0.03	5.99
3.	Years of studying	2	0.3	5.99	2	0.23	5.99
4.	Place of residence	2	0.1	5.99	2	0.47	5.99
5.	Dietary habits	2	0.26	5.99	2	0.55	5.99
6.	Suffering from chronic illness	2	0.05	5.99	2	3.11	5.99
7.	Taking regular medication for any illness	2	0.05	5.99	2	3.11	5.99
8.	Previous knowledge regarding obesity	2	0.76	5.99	2	0.003	5.99
9.	Family history of obesity	2	0.21	5.99	2	0.04	5.99
10.	Family monthly income	1	0.39	3.84	1	0.003	3.84

*significant at $p \leq 0.05$ level.

Table shows 13, there is a significant association between gender and the post-test scores on knowledge regarding obesity management among obese adolescents in experimental group. Hence, hypothesis H_4 is accepted for gender at $p \leq 0.05$ level.

Implications

Nursing Practice

- The nurse plays an important role in school health services to provide continuous education to the obese adolescent regarding importance of dietary and non dietary management of practice.

Nursing Education

- Nurse educator acts a change agent to prepare the nursing students in order to identify and educate obese adolescents about obesity management.

- Nurse educator also should emphasize general public and health care professionals about the importance of avoiding negative stereotypes, discrimination and biased attitude towards the obese adolescents.

Nursing Administration

- The nurse administrator should implement specialized training programs for nursing staffs focused on effective communication and counselling techniques for obese adolescents and their families.

Recommendations

- A comparative study can be conducted between urban and rural school obese adolescents

- A long term study can be conducted to assess the impacts of obesity.

Conclusion

Adolescent period is treated as transition period from childhood to adulthood during transitional phase adolescents develop behavioural patterns and make lifestyles that can also affect their present health and future. And obesity is a social disease that is best treated with social solutions like addressing their issue by creating an awareness on obesity management.

Conflicts of Interest and Source of Funding: Nil

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Factors Influencing Delay in Treatment-Seeking Among Adults with Acute Ischemic Stroke: A Retrospective Case-Control Study at Selected Private Hospital, Coimbatore, Tamil Nadu

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Abstract

Background: Acute ischemic stroke (AIS) is a leading cause of death and long-term disability worldwide. Timely intervention, particularly thrombolysis within the 4.5-hour therapeutic window, can significantly improve outcomes. In India, however, pre-hospital delays frequently prevent patients from receiving time-sensitive treatment.

Objective: To examine demographic, clinical, cognitive, and social factors associated with delays in seeking treatment among adults diagnosed with AIS.

Methods: A retrospective case-control study was conducted among 105 AIS patients admitted to private hospital, Coimbatore. Patients were categorized into within-window (<4.5 hours; n = 39) and after-window (>4.5 hours; n = 66) groups. Data were collected using structured questionnaires, the Duke Social Support and Stress Scale (DUSOCS), and the NIH Stroke Scale (NIHSS). Statistical analysis included Chi-square tests and logistic regression; significance was set at $p \leq 0.05$.

Results: The mean time to hospital arrival was 7 hours 47 minutes (SD = 5 h 33 m), with 62.9% presenting after the 4.5-hour window. Delayed presentation was significantly associated with poor stroke knowledge ($p = 0.01$), low perceived seriousness of symptoms ($p < 0.001$), inadequate non-family support ($p < 0.001$), and coexisting hypertension and diabetes ($p = 0.005$). Patients presenting after the window had higher rates of moderate-to-severe strokes (NIHSS: 50%) compared to those presenting within the window (2.6%).

Conclusion: Delays in treatment were primarily attributable to inadequate symptom recognition, underestimation of severity, limited social support, and transport barriers. Public awareness initiatives, strengthened emergency medical services, and enhanced community support systems are essential to reducing pre-hospital delays in AIS care.

Keywords: Acute ischemic stroke, treatment delay, social support, symptom perception, India

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Introduction

Stroke is the second leading cause of death globally and a major cause of long-term disability (Revathi et al., 2023)^[3]. Ischemic strokes account for the majority of cases, with acute ischemic stroke (AIS) resulting from cerebral artery occlusion. Early reperfusion therapy, particularly thrombolysis with tissue plasminogen activator (tPA), has been proven to reduce disability when administered within the 4.5-hour golden window from symptom onset (Joseph, Divakaran, Mathew, & Menon, 2024) ^[5].

In India, stroke burden is increasing due to aging populations, hypertension, diabetes, and sedentary lifestyles (Revathi et al., 2023) ^[3]. Despite improved diagnostic and therapeutic resources in tertiary care hospitals, many patients present too late to benefit from thrombolysis ^[4]. Factors such as low awareness of stroke symptoms, delays in recognizing severity, limited access to emergency medical services (EMS), and inadequate social support have been reported as significant contributors to delay (Aruyan, Chaiyasit, & Kanchanarin, 2024) ^[1]. "Factors such as low awareness of stroke symptoms, delays in recognizing severity, limited access to emergency medical services (EMS), and inadequate social support have been reported as significant contributors to delay." ^[2]

Need for the study: Despite several Indian studies describing pre-hospital delay in stroke, most have focused on public or government hospitals and have not examined the combined influence of cognitive factors, comorbidities, and social support within the private-hospital setting of Tamil Nadu ^[19]. This limited evidence leaves an important knowledge gap regarding how these variables interact in private tertiary care centres, where care pathways and patient profiles may differ from those in public facilities^[17]. To address this gap and guide context-specific interventions, the present study aimed to identify factors influencing treatment-seeking delay among adults with acute ischemic stroke (AIS) admitted to a tertiary private hospital in Tamil Nadu, India, to inform targeted strategies for timely stroke management. ^[18]

Research gap: Few data from private tertiary hospitals examining cognitive, social, and clinical factors together. Findings will inform tailored interventions to reduce pre-hospital delay in similar private-care settings.

Methods

Study Design and Setting

This retrospective case-control study was conducted at selected private hospital, Coimbatore, a tertiary care facility with specialized neuro-intervention services.

Participants

A total of 105 adult patients diagnosed with AIS via CT cerebral angiography were included.

- Within-window group: arrival $\leq$ 4.5 hours (n = 39)
- After-window group: arrival $>$ 4.5 hours (n = 66)

Inclusion criteria: Adults aged ≥ 18 years with confirmed AIS, able to participate in interviews or provide reliable case records.

Exclusion criteria: Exclusion criteria included a history of prior stroke, significant cognitive impairment (as documented in the medical record or identified during screening), or a stroke diagnosed incidentally during hospitalization for another primary condition. Because this was a retrospective case-control study using medical records, informed consent was obtained from all living participants or their legally authorized representatives when patients were unable to provide consent for the use of their data.

Instruments

1. Demographic and Clinical Proforma – Age, sex, education, income, occupation, comorbidities.
2. **Cognitive Factors Questionnaire** – This investigator-designed questionnaire assessed (a) knowledge of stroke warning signs and risk factors, (b) recognition of symptom onset,

and (c) perceived seriousness of symptoms. Item generation was informed by existing stroke-awareness instruments and guidelines, including the World Health Organization stroke education framework and the American Stroke Association's FAST campaign^[16,18]

3. Compliance Assessment - Adherence to medication/self-care for chronic conditions.^[8,12]
4. Duke Social Support and Stress Scale (DUSOCS) - Measures family and non-family support.^[9]
5. NIH Stroke Scale (NIHSS) - Categorizes stroke severity.^[10]

Data Analysis

Data were analyzed using SPSS v20. Descriptive statistics summarized demographic and clinical characteristics. Chi-square tests examined associations between variables and treatment delay.

Logistic regression identified significant predictors. Statistical significance was set at $p \leq 0.05$.

Results

Extent of Delay

Table 1 & Figure 1 :presents treatment-seeking times. Over 60% arrived beyond the 4.5-hour window, with a mean arrival time of nearly 8 hours.

Table 1. and figure 1 Treatment-Seeking Time among Patients with Acute Ischemic Stroke

Time from Symptom Onset to Hospital Arrival	Frequency (n)	Percentage (%)
< 4 hours (within window)	39	37.1
4-12 hours	48	45.7
12-24 hours	16	15.2
> 24 hours	2	1.9
Total	105	100

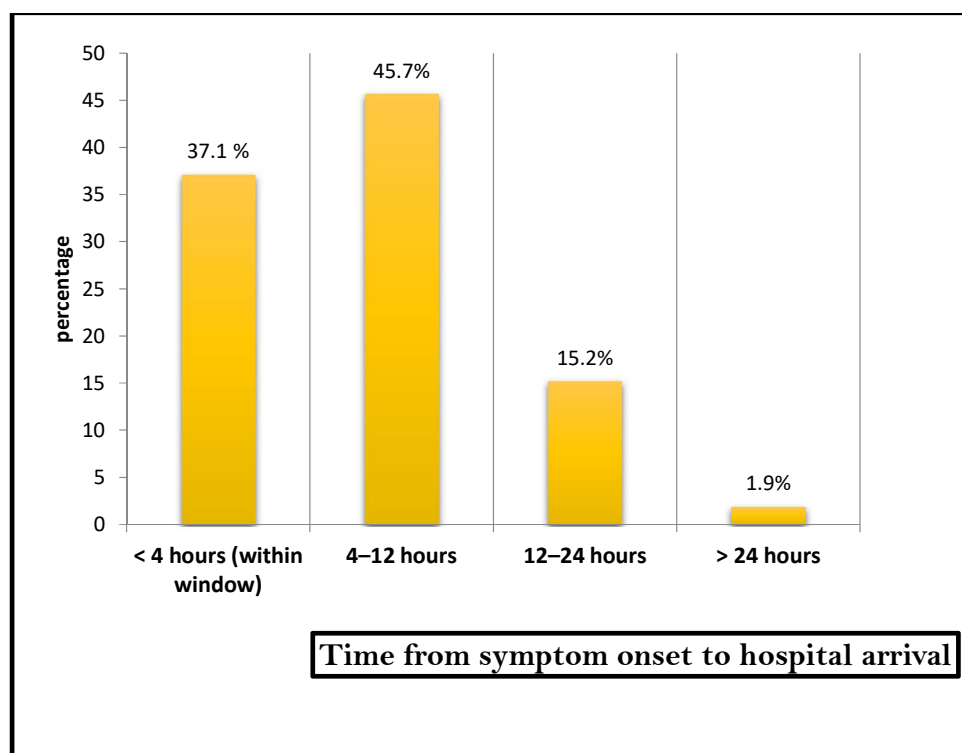


Figure 1: (treatment-seeking times)

Cognitive Factors

Table 2 Figure 2 shows that patients with low knowledge of stroke symptoms were significantly more likely to present late.

Table 2. Knowledge Level about Acute Ischemic Stroke by Treatment Window

Knowledge Level	Within Window (<4 h) n (%)	After Window (>4 h) n (%)	χ^2	p-value
Low	11 (28.2)	40 (60.6)	18.71	0.01 **
Moderate	15 (38.5)	23 (34.9)		
High	13 (33.3)	3 (4.5)		

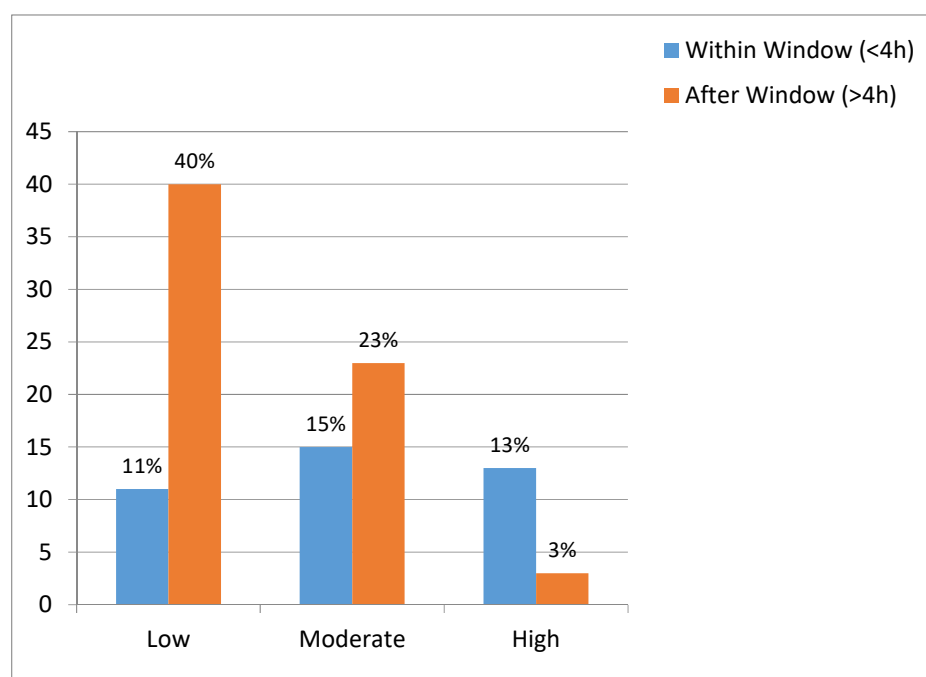


Figure 2: (knowledge level)

Perceived Seriousness

Perception of mild severity was much more common in the delayed group (Table 3 & Figure 3).

Table 3. Perceived Seriousness of Symptoms by Treatment Window

Perceived Seriousness	Within Window (<4 h) n (%)	After Window (>4 h) n (%)	χ^2	p-value
Mildly serious	0 (0.0)	17 (25.8)	27.17	<0.001 ***
Moderately serious	8 (20.5)	18 (27.3)		
Very serious	14 (35.9)	23 (34.9)		
Extremely serious	15 (38.5)	3 (4.5)		

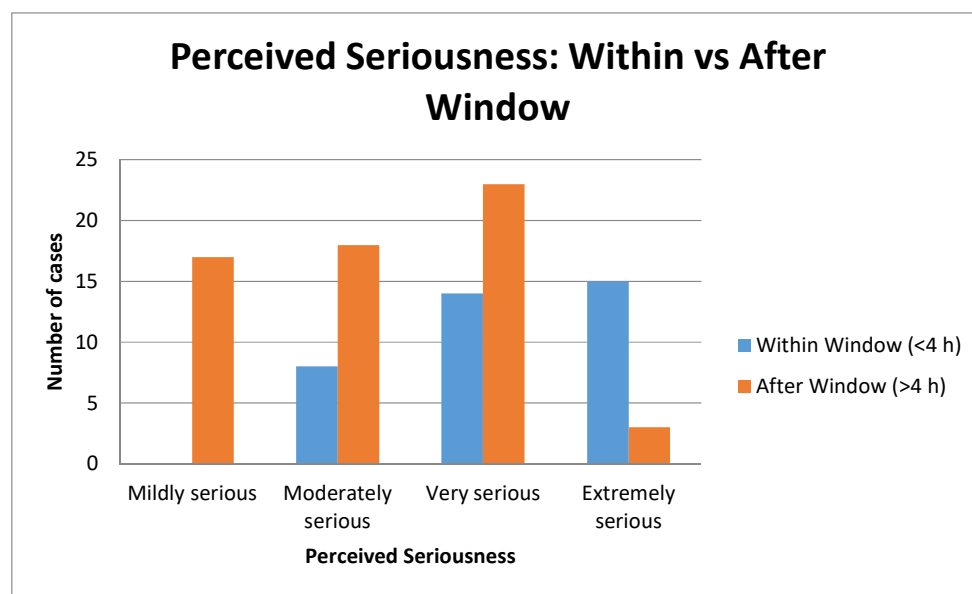


Figure 3: (seriousness of symptoms)

Stroke Severity

NIHSS scores indicated more severe strokes among those who arrived late (Table 4).

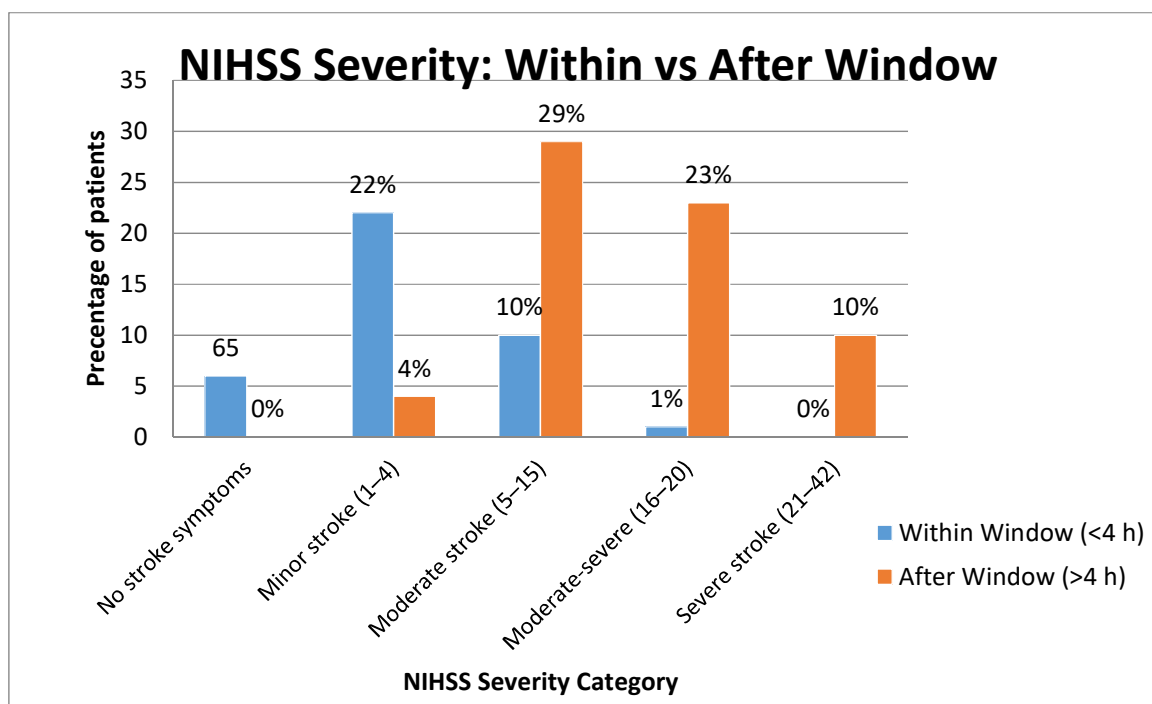


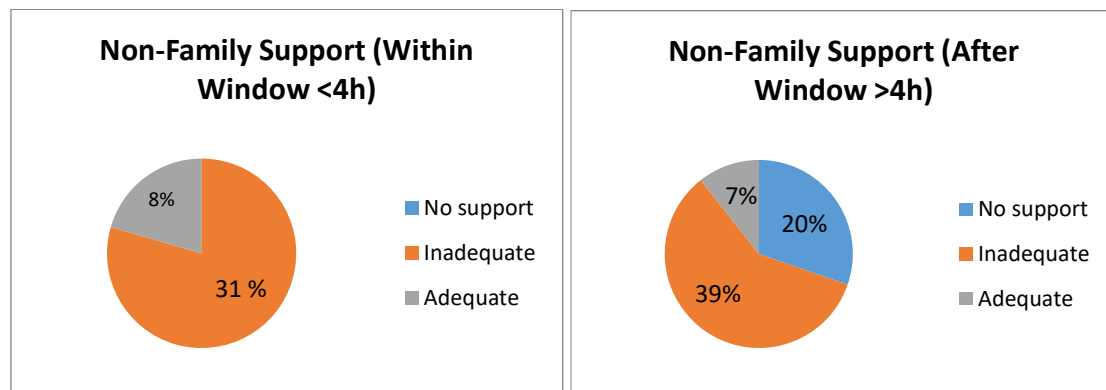
Figure 4: (severity by treatment window)

Table 4 & Figure 4 : NIHSS Stroke Severity by Treatment Window

NIHSS Severity Category	Within Window (<4 h) n (%)	After Window (>4 h) n (%)	χ^2	p-value
No stroke symptoms	6 (15.4)	0 (0.0)	54.55	<0.001 ***
Minor stroke (1–4)	22 (56.4)	4 (6.1)		
Moderate stroke (5–15)	10 (25.6)	29 (43.9)		
Moderate-severe (16–20)	1 (2.6)	23 (34.9)		
Severe stroke (21–42)	0 (0.0)	10 (15.2)		

Social Support

Non-family support was notably inadequate in the delayed group (Table 5& figure 5).

**Figure 5: family support level****Table 5. Non-Family Support Levels by Treatment Window**

Non-Family Support Level	Within Window (<4 h) n (%)	After Window (>4 h) n (%)	χ^2	p-value
No support	0 (0.0)	20 (30.3)	15.03	<0.001 ***
Inadequate	31 (79.5)	39 (59.1)		
Adequate	8 (20.5)	7 (10.6)		

Discussion

This study found that nearly two-thirds of AIS patients arrived after the recommended therapeutic window for thrombolysis. Consistent with recent studies from India, low stroke knowledge and misinterpretation of symptoms were major contributors to delay [6]

The strong association between inadequate non-family support and delayed presentation underscores the importance of social networks in emergency response [20]. Coexisting hypertension and diabetes were also linked to delays, possibly because patients and caregivers misattributed acute neurological symptoms to chronic conditions. Similar patterns have been reported in Southeast

Asia,^[1] and are consistent with findings from other regions of India, where low social support and poor recognition of stroke warning signs independently predicted late arrival. ^[3,4,5] Studies from Pakistan and Kerala further highlight socioeconomic constraints, family decision-making dynamics, and limited emergency medical service utilization as key contributors to pre-hospital delay.^[11,7] Collectively, these observations reinforce that treatment-seeking delay is multifactorial and transcends geographic boundaries, requiring multifaceted community- and system-level interventions. ^[4]

These findings highlight the need for targeted stroke education, improved EMS coverage, and community-based support systems to ensure timely access to care.^[13]

Conclusion

Most AIS patients in this study presented beyond the optimal window for reperfusion therapy. Addressing the identified cognitive, social, and logistical barriers could substantially improve timely hospital arrival and clinical outcomes.^[14]

Implications

- **Community Education:** Nurses can lead stroke-awareness programs in villages, workplaces, and outpatient clinics to teach the FAST (Face, Arm, Speech, Time) signs and the need for rapid hospital transport.
- **Strengthening EMS Links:** Nurse Educators and administrators can work with emergency services to develop quick-referral protocols and provide training in prehospital stroke triage.
- **Family and Social Support:** Community health nurses can identify patients at risk (elderly, those living alone) and build support networks to ensure timely help during emergencies.
- **Policy Input:** Nurse leaders can advocate for better ambulance coverage and stroke-care pathways in rural and peri-urban areas, using

evidence from this study to guide health-policy decisions.

Limitations

- Conducted in one private tertiary hospital in Tamil Nadu, so results may not represent government hospitals or rural communities.
- Retrospective design relied on hospital records and patient recall, which may contain missing or inaccurate details.
- Modest sample size limits detection of less common factors affecting delay.

Future Research

- **Multicenter Prospective Studies:** Include both private and public hospitals to compare treatment-seeking behavior across settings.
- **Qualitative Studies:** Explore patient, family, and community perceptions of stroke symptoms and barriers to early hospital arrival.
- **Intervention Trials:** Test nurse-led education programs, tele-EMS coordination, and community support models to see if they shorten prehospital delay.
- **Follow-up Outcomes:** Assess how timely arrival influenced recovery, rehabilitation needs, and long-term quality of life.

Recommendations

1. Public education on FAST (Face, Arm, Speech, Time) for stroke recognition.
2. Strengthening EMS for rapid transport in both urban and rural areas.
3. Primary care training for immediate referral of suspected stroke.
4. Community engagement to foster supportive networks for at-risk individuals.

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