

A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF HANDS-ON SKILL TRAINING PROGRAMME REGARDING PREVENTION AND MANAGEMENT OF SPECIFIC UNDER FIVE CHILDHOOD ILLNESSES IN ENHANCING THE KNOWLEDGE AND COMPETENCIES AMONG PRIMARY CAREGIVERS IN SELECTED COMMUNITIES OF DELHI NCR

Ms. Riya Joon¹, Dr. (Prof.) Sarika Yadav^{2*}, Ms. Deepti³, Ms. Roshni⁴

¹PG Tutor, Child Health Nursing, School of Nursing, SGT University, Gurugram, Haryana-122505, India

^{2*}Associate Dean, School of Nursing, SGT University, Gurugram, Haryana -122505, INDIA.

³PG Tutor, Child Health Nursing, Sharda School of Nursing Sciences and Research, Sharda University, Greater Noida, U.P. 201306, INDIA

⁴PG Tutor, Medical Surgical Nursing (CCN) Department, Faculty of Nursing, Metro College of Nursing Greater Noida, UP-201310, India.

ABSTRACT

Background:

Under-five childhood illnesses remain a major contributor to morbidity and mortality in India, particularly among socioeconomically disadvantaged populations. Despite the existence of national health programs, knowledge and skill gaps persist among primary caregivers regarding the identification and management of common illnesses such as diarrhea, pneumonia, otitis media, and malnutrition. This quasi-experimental study was conducted to assess the effectiveness of a structured hands-on skill training programme aimed at enhancing the knowledge and competencies of primary caregivers in selected communities of Delhi NCR. The intervention emphasized practical demonstrations and skill-based learning tailored to local needs and literacy levels.

A total of 120 caregivers were selected using purposive sampling, with 60 in the experimental group receiving the training and 60 in the control group receiving no intervention. Data were collected using a structured knowledge questionnaire and observational checklists before and after the intervention. The findings demonstrated a significant improvement in post-test knowledge and competency scores among the experimental group compared to the control group. This study underscores the importance of interactive, community-based training models in empowering caregivers and improving child health outcomes. The results advocate for the integration of skill-based educational programs into routine maternal and child health services at the community level

STATEMENT OF THE PROBLEM

“A Quasi Experimental study to assess the Effectiveness of hands on skill training programme regarding prevention and management of specific under five childhood illnesses in enhancing the knowledge and competencies among primary caregivers in selected communities of Delhi NCR.”

OBJECTIVES OF THE STUDY

- To assess and evaluate the level of knowledge and competencies of primary caregivers regarding the prevention and management of specific under-five childhood illnesses.
- To evaluate the effectiveness of a hands-on skill training program in improving the knowledge and practical competencies of primary caregivers in managing common under-five childhood illnesses.
- To seek the association between post test level of knowledge score of primary care givers regarding prevention and management of specific under five childhood illness with selected demographic variables
- To seek the association between post test competency score of primary care givers regarding prevention and management of specific under five childhood illness with selected demographic variables

METHOD

A quantitative quasi-experimental design with a non-equivalent pre-test–post-test control group was adopted to evaluate the effectiveness of a hands-on skill training program aimed at improving the knowledge and competencies of primary caregivers in the prevention and management of selected under-five childhood illnesses. The study was conducted in selected communities of Delhi NCR, with a total sample size of 120 caregivers—60 each in the experimental and control groups—selected through purposive sampling. Pre-intervention assessment of caregivers' knowledge and competencies was conducted using a structured questionnaire and competency checklist. The experimental group then received a structured hands-on skill training intervention over a period of 20 days, covering conditions such as diarrhea, pneumonia,

otitis media, and malnutrition, using demonstrations, visual aids, and supervised practice. Post-intervention assessment was conducted on day 21 for both groups. Data were analyzed using descriptive and inferential statistics, including t-tests and chi-square tests, to evaluate changes in knowledge and skill levels and to determine associations with selected demographic variables. The study adhered to ethical standards with informed consent obtained from all participants.

RESULTS

The findings revealed a significant improvement in the knowledge and competencies of primary caregivers in the experimental group following the hands-on skill training intervention. Pre-test scores indicated that a majority of participants in both groups had inadequate to moderate knowledge and competency levels. Post-intervention assessment showed a statistically significant increase in mean knowledge and competency scores in the experimental group compared to the control group ($p < 0.05$). The training program notably enhanced caregivers' ability to identify symptoms and manage illnesses such as diarrhea, pneumonia, otitis media, and malnutrition. Moreover, significant associations were found between post-test scores and selected demographic variables such as educational status and source of health information.

CONCLUSION

The hands-on skill training programme was effective in enhancing both the knowledge and practical competencies of primary caregivers in managing under-five childhood illnesses. The study underscores the importance of participatory, skill-based health education interventions at the community level. Empowering caregivers with practical, actionable knowledge can bridge the gap between awareness and effective home-based care, ultimately contributing to a reduction in preventable child morbidity and mortality in underserved urban areas.

KEYWORDS: Integrated Management of Childhood Illness, Under Five Childhood illness, Hands on Skill Training, Primary Caregiver.

INTRODUCTION

“ Saving the life of a child is a noble act. Giving someone the knowledge to save many lives is even nobler.”

— Dr. Paul Farmer, Physician and Global Health Advocate

The first five years of life are a critical period for growth, development, and survival. During this stage, children are particularly vulnerable to infections, nutritional deficiencies, and other health problems. Pneumonia, diarrhoea, malnutrition, fever, and acute respiratory infections continue to contribute substantially to illness and mortality among children under five years of age. Many of these conditions are preventable or manageable when caregivers can recognize early symptoms, provide appropriate initial care, and seek timely professional assistance.

In India, several national programmes, including the Integrated Child Development Services, National Health Mission, and Reproductive, Maternal, Newborn, Child and Adolescent Health initiatives, have been implemented to improve child health. Despite these efforts, preventable childhood illnesses remain a concern, particularly among children living in disadvantaged communities.

Delhi National Capital Region (NCR) presents a diverse socioeconomic environment. Alongside advanced healthcare facilities, many families live in slums, informal settlements, and peri-urban communities where overcrowding, inadequate sanitation, poor housing, limited access to safe water, and restricted health resources may increase children's vulnerability to illness.

Primary caregivers are usually the first to identify changes in a child's health and are responsible for providing day-to-day care. Their knowledge and decisions regarding home management, care-seeking, and referral can substantially influence the outcome of childhood illness. Limited knowledge, misconceptions, inappropriate home remedies, and delays in seeking healthcare may increase the risk of complications.

Conventional health education through lectures, pamphlets, and verbal instructions can improve awareness; however, information alone may not ensure that caregivers can perform appropriate health-related skills. This limitation highlights the importance of interactive and experiential approaches that enable caregivers to learn by observing, practicing, and receiving feedback.

Hands-on skill training provides caregivers with practical opportunities to develop knowledge, confidence, and competency. Demonstrations, supervised practice, role play, and group activities can help caregivers translate information into appropriate actions. Such training can focus on recognizing warning signs, maintaining hygiene, providing appropriate supportive care, and understanding when professional medical attention is required.

The present study is based on this practical approach to health education. It evaluates a structured hands-on skill training programme designed to improve the knowledge and competencies of primary caregivers regarding the prevention, early recognition, and management of common under-five childhood illnesses in selected communities of Delhi NCR. The programme focuses on developing practical skills through demonstrations, practice, role play, and discussion, with the broader aim of strengthening caregivers as competent first responders within the family and community.

NEED OF THE STUDY

Childhood illnesses remain an important public health concern because many serious complications and deaths can be prevented through timely recognition, appropriate home care, and early referral. Under-five children are particularly

vulnerable to pneumonia, diarrhoea, malnutrition, acute respiratory infections, and other common illnesses. The burden is often greater in communities affected by poverty, inadequate sanitation, overcrowding, limited health literacy, and restricted access to healthcare.

The health status of a young child is strongly influenced by the knowledge and practices of the primary caregiver. Caregivers are often responsible for identifying the first symptoms of illness, initiating home-based care, monitoring the child's condition, and deciding when healthcare should be sought. However, knowledge gaps regarding warning signs, appropriate home management, and timely referral can result in delayed treatment and preventable complications.

Although health education is routinely provided through conventional methods, theoretical information may not adequately develop practical competency. Caregivers may understand a health message but remain uncertain about how to apply it during an actual illness episode. Hands-on learning addresses this gap by allowing caregivers to perform skills under supervision and correct errors during the learning process.

Practical training is particularly important for conditions such as pneumonia, where early recognition of respiratory difficulty and danger signs can influence the decision to seek urgent medical care. Similarly, caregivers require practical understanding of preventive measures, supportive care, and appropriate referral for diarrhoea, fever, malnutrition, and other common childhood conditions. Developing these competencies can improve caregivers' confidence and promote appropriate health-seeking behaviour.

The WHO and UNICEF-supported Integrated Management of Childhood Illness approach emphasizes strengthening family and community practices for improving child health. India has incorporated similar principles into national child-health strategies and community-based programmes. However, the implementation of structured, skill-based caregiver training remains inconsistent, particularly in underserved urban and peri-urban communities.

Delhi NCR is an important setting for such an intervention because it includes communities with considerable differences in socioeconomic status, health literacy, living conditions, and access to healthcare. Despite the availability of healthcare facilities, vulnerable populations may continue to experience delayed care-seeking and inadequate home management of childhood illnesses. A community-based hands-on programme can help address the gap between healthcare availability and the caregiver's ability to use appropriate knowledge and skills.

There is therefore a need to evaluate structured interventions that focus not only on increasing knowledge but also on developing measurable practical competencies. A quasi-experimental design provides an appropriate framework for assessing changes in caregivers' knowledge and skills before and after an educational intervention.

Community health nurses have an important role in providing health education, demonstrating essential skills, correcting misconceptions, and empowering families to participate actively in child healthcare. Effective caregiver training may also have a wider community impact as trained caregivers can share appropriate practices with other family members.

Therefore, the present study is needed to determine whether a structured hands-on skill training programme can improve the knowledge and competencies of primary caregivers regarding the prevention and management of common under-five childhood illnesses. The findings may provide evidence for strengthening community-based caregiver education and developing practical, culturally appropriate interventions that can contribute to reducing preventable childhood morbidity and improving child health outcomes in Delhi NCR and similar settings.

STATEMENT OF THE PROBLEM

A Quasi Experimental study to assess the effectiveness of Hands on Skill Training Programme regarding Prevention and Management of Specific under five Childhood Illnesses in enhancing the knowledge and competencies among primary caregivers in selected communities of Delhi NCR.

OBJECTIVES OF THE STUDY

The objectives of the study were to:

- To assess and evaluate the level of knowledge and competencies of primary caregivers regarding the prevention and management of specific under-five childhood illnesses.
- To evaluate the effectiveness of a hands-on skill training program in improving the knowledge and practical competencies of primary caregivers in managing common under-five childhood illnesses.
- To seek the association between post test level of knowledge score of primary care givers regarding prevention and management of specific under five childhood illness with selected demographic variables
- To seek the association between post test competency score of primary care givers regarding prevention and management of specific under five childhood illness with selected demographic variables

PURPOSE OF THE STUDY

To assess the effectiveness of hands-on skill training in improving caregivers' knowledge and competencies for managing under-five illnesses in Delhi NCR communities.

HYPOTHESIS OF THE STUDY

NULL HYPOTHESIS

H01 : There will be no significant difference in the mean post test knowledge score of primary caregivers regarding prevention and management of specific under-five childhood illnesses before and after the hands-on skill training programme.

H02 : There will be no significant difference in the mean post test competencies of primary caregivers regarding prevention and management of specific under-five childhood illnesses before and after the hands-on skill training programme.

H03 : There will be no significant association between the post test knowledge score of primary caregivers regarding prevention and management of specific under-five childhood illnesses with selected demographic variables at 0.05 level of significance.

H04 : There will be no significant association between the competency score of primary caregivers regarding prevention and management of specific under-five childhood illnesses with selected demographic variables at 0.05 level of significance.

ALTERNATE HYPOTHESIS

H1 : There will be significant difference in the mean post test knowledge score of primary caregivers regarding prevention and management of specific under-five childhood illnesses before and after the hands-on skill training programme.

H2 : There will be significant difference in the mean post test competencies of primary caregivers regarding prevention and management of specific under-five childhood illnesses before and after the hands-on skill training programme.

H3 : There will be significant association between the post test knowledge score of primary caregivers regarding prevention and management of specific under-five childhood illnesses with selected demographic variables at 0.05 level of significance.

H4 : There will be significant association between the competency score of primary caregivers regarding prevention and management of specific under-five childhood illnesses with selected demographic variables at 0.05 level of significance.

DELIMITATIONS OF THE STUDY

The study is conducted in selected communities of Delhi NCR, which may limit the applicability of the findings to other regions with different socio-cultural, economic, and healthcare contexts.

The study may have a restricted sample size (60 in each group) which could impact the reliability of the results.

The duration of the hands-on skill training program and follow-up assessments might not be sufficient to capture long-term retention of knowledge and skills

ASSUMPTIONS

It is assumed that primary caregivers have varying levels of baseline knowledge and skills in managing childhood illnesses, which will impact their learning outcomes from the training program.

The hands on skill training programme is an effective method to improve the knowledge and skill of the primary caregiver regarding specific under 5 childhood illnesses.

OPERATIONAL DEFINITIONS

Effectiveness: In this study effectiveness refers to the degree upto which the hands on skill training programme is able to improve the knowledge and skill of primary caregiver to manage under 5 childhood illnesses.

Hands on Skill Training Programme: In this study Hands on Training Programme refers to structured training session that includes demonstrations and print media to enhance the knowledge and skills of primary caregivers in the management of under 5 childhood illness.

Specific Under 5 childhood Illnesses: In this study specific under 5 childhood illness includes Diarrhea, Pneumonia, Otitis Media and Malnutrition.

Knowledge: In this study knowledge refers to the understanding possessed by primary caregivers regarding prevention and management of under-five childhood illnesses. It is assessed using a structured, pre-tested knowledge questionnaire comprising multiple-choice questions.

Competencies: In this study competencies refers to the practical ability of primary caregivers to apply knowledge and perform specific caregiving tasks related to the management of under-five childhood illnesses. Competency is measured using a checklist assessment tools, observed and rated by evaluators. It includes aspects such as correct handwashing technique, preparation of home made oral rehydration solution (ORS), Ear care, Nebulization and position of breastfeeding.

Primary Care Giver: In this study primary health care giver refers to the main individuals responsible for the daily care of under-five children in the household. This may include mothers, fathers, grandmothers, or other female guardians residing in the selected communities of Delhi NCR.

ETHICAL CONSIDERATION

The ethical problem was taken into account in this investigation. There were no ethical problems encountered during the research. Prior authorization was also obtained from members of the Shree Guru Gobind Singh Tricentenary University's ethics council. The individuals' consent was acquired before to data collection, and they were informed that the data would be kept confidential. The individuals were also informed that their involvement with in the study was absolutely voluntary and that they may opt out at any moment.

TABLE NO. 1 Schematic Representation of Research Design

GROUP	PRE-TEST (DAY-1)	INTERVENTION (DAY-2 to 20)	POST-TEST (DAY- 21)
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EXPERIMENTAL GROUP	Interview schedule for demographic data. Assess level of knowledge and competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses	Hands on Skill Training Programme regarding Prevention and Management of Specific under five Childhood Illnesses	Assess level of knowledge and competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses.
CONTROL GROUP	-do-	No intervention	-do-

TABLE NO. 2 Symbolic Representation of Research Design

E	OP1OD1	X	OP2OD2
C	OP3OD3	-	OP4OD4

KEYS-

E- Experimental group

C- Control group

OP1OD1- Pre-test to assess the level of knowledge and competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses in experimental group on DAY-1.

OP3OD3- Pre-test to assess the level of knowledge and competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses in control group on DAY-1.

X- Intervention from DAY-2 to 20 (Hands on Skill Training Programme regarding Prevention and Management of Specific under five Childhood Illnesses).

OP2OD2- Post-test to assess the level of knowledge and competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses in experimental group on DAY- 21.

OP4OD4- Post-test to assess the level of knowledge and competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses in control group on DAY- 21.

SETTING OF THE STUDY

The research context refers to the knowledge and competencies of primary care givers regarding the Prevention and Management of Specific under five Childhood Illnesses information is collected. The research was carried out at the Delhi NCR. The Delhi NCR were chosen for the study because of their geographical proximity, study feasibility, and sample availability.

VARIABLES UNDER THE STUDY

It is a definable property, occurrence, or response that encapsulates the parts of the study question. In an experiment, a variable is a factor that may be controlled or modified. (2014, Wong).

Independent Variable:

These variable, according to Treece and Treece (1998), is the one variable that stands alone and is not dependent on any other. It is the root of the problem.

It refers to Hands-on Skill Training Programme in the current study.

Dependent Variable:

A **dependent variable** is the outcome or the effect that is measured in a study to determine the impact of the intervention or independent variable. It reflects the changes or responses that occur as a result of manipulating the independent variable.

It refers to Knowledge, Competencies of primary caregivers regarding Prevention and Management of Specific under five Childhood Illnesses in the current study.

Demographic Variable:

Demographic variables are features, properties, or characteristics of the research subject that are collected to describe the sample; these variables are also known as sample characteristics.

Age, Gender, Age of Child, Relation with child, Highest level of Education, Residence, Occupation, Income of Household, Number of Children, Number of Children in the household, Sex of Child, Childbirth order, Family Size, Source of Information in the current study are the demographic variables.

POPULATION

A population is a group of individual or things with comparable characteristics that the investigator has specified. The complete group of individuals or items that fulfil a set of criteria provided by the researcher is referred to as the target population.

All primary care givers in the Delhi NCR were included in this study.

SAMPLE AND SAMPLING TECHNIQUE

Sample

A sample size is a subset of a population whose features are studied to acquire more about the entire population (Webster, 1985).

Sample size calculation:

Input Tails- Two

Effect size- 0.5

Alpha(α) error prob.- 0.05

Power (1 - β error prob)- 0.77

Output non centrally parameter -2.739

Critical-t- 1.980

Total sample size-120

Actual power- 0.7752659

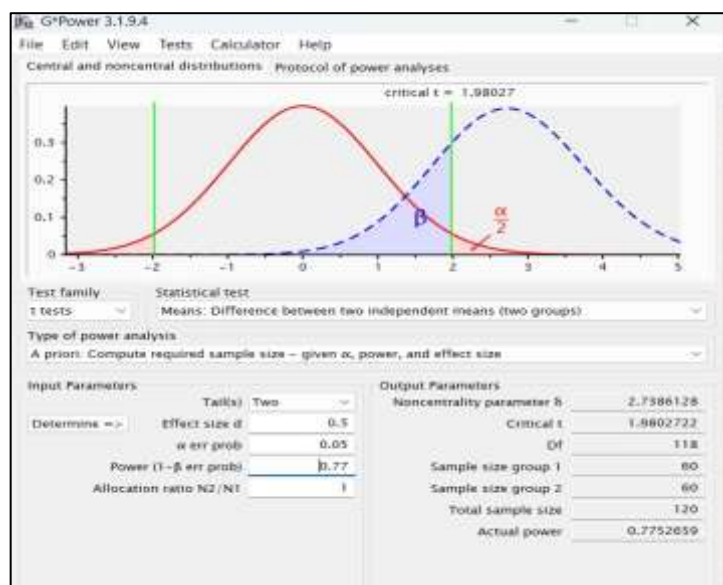
Hence the sample size was calculated using G power software (version 3.1.9.7).

Based on the calculated effect size of 0.50, 5% level of precision, 95% confidence level and 77% power of the study.

The minimum sample size was calculated as 60 Group 1 and 60 as Group 2.

We will be evaluating total 120 sample of our study in which 60 are cases and 60 remain as control. So, our total sample size will be 120.

From the target group, 120 primary care givers who satisfied the inclusion criteria were chosen for this study.



Sampling Technique

The practise of picking a set of individuals, events, or positions from the population to represent the complete population is known as sampling.

The sample for this research was chosen using a non probability purposive sampling method from 120 primary care givers in the Delhi NCR region (60 experimental group) and (60 control group).

Rationale for Using Purposive Sampling:

- Ensures that participants possess the characteristics essential to the study, such as primary caregivers knowledge and competencies.
- Practical for selecting participants from specific settings, such as selected primary care givers residing in Delhi NCR.
- Facilitates in-depth exploration of the research problem by focusing on individuals most likely to provide relevant information.
- Ensures that the intervention is tested on the right population, leading to more reliable conclusions on its effectiveness.

CRITERIA FOR SELECTING THE SAMPLE

The eligibility criteria, also known as sampling criteria, are a collection of fundamental parameters for eligibility or membership in the target population. Inclusion or exclusion sampling criteria, or both, are included in a study's sample criteria.

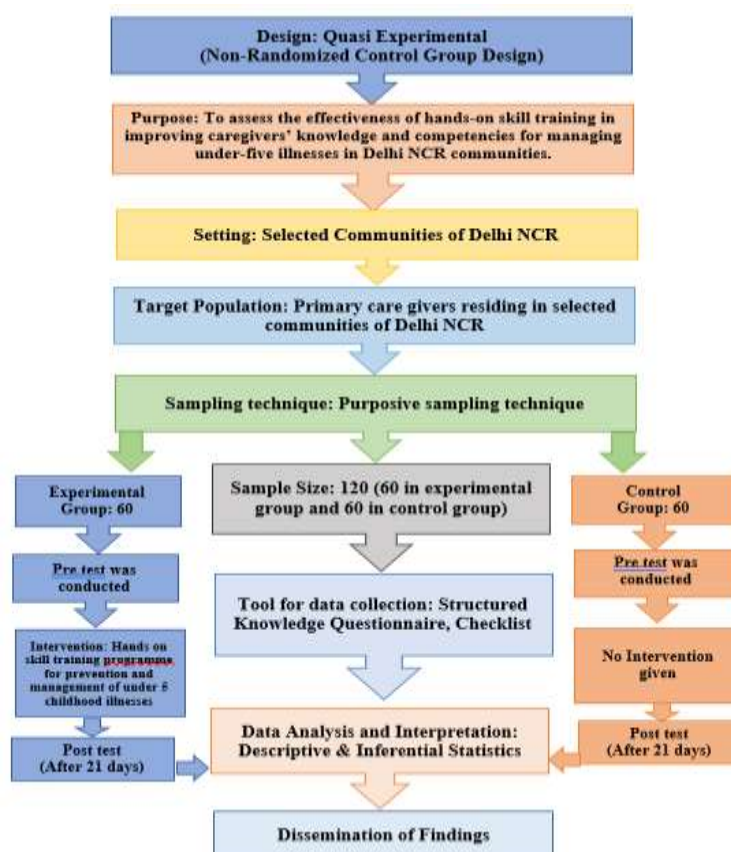
Inclusive Criteria:

- Primary caregivers (e.g., parents, grandparents, or guardians) responsible for children under five years of age.
- Caregivers residing in selected communities of Delhi NCR.
- Caregivers willing to participate in the study and provide informed consent.
- Caregivers who are available during the study period for training.
- Caregivers who can understand and communicate in the language used for the training program (e.g., Hindi or English).

Exclusive criteria:

- Caregivers of children with chronic illnesses or congenital disorders requiring specialized care.
- Caregivers who are healthcare professionals or have a medical/nursing background.

SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY



DESCRIPTION OF THE DATA COLLECTION TOOLS AND TECHNIQUES

- SECTION A: Socio Demographic Variable
- SECTION B: Knowledge Questionnaire for Common illness among Under 5 children
- SECTION C: Checklist For Assessment of Under five childhood Illness

SECTION A: It includes questions about Age, Gender, Age of Child, Relation with child, Highest level of Education, Residence, Occupation, Income of Household, Number of Children, Number of Children in the household, Sex of Child, Childbirth order, Family Size, Source of Information of primary care givers.

SECTION B: A Questionnaire related to Knowledge of Diarrhoea, Signs of Dehydration, Danger Signs of Pneumonia, Otitis Media and Malnutrition; developed for the assessment of knowledge of caregivers.

There were a total of 5 elements in the knowledge questionnaire, covering under five childhood illnesses. The declaration is split into five sections, each with a score ranging from 0 to 4 for signs of dehydration; 0 to 5 for diarrhoea and otitis media; 0 to 6 for pneumonia and malnutrition.

The range of assessment scale items the correct response get 1 mark and incorrect response get 0 mark.

Criteria range:

Maximum Score : 26

Minimum score :0

TABLE NO. 3 Categorization of the Knowledge Score according to the Percentage

Category	Knowledge Score
Poor Knowledge	< 50%
Moderate Knowledge	50-75%
Good Knowledge	>75%

SECTION C: A assessment checklists were developed for the handwashing, home made ORS preparation, Nebulization and Eye care for the assessment of the competencies of Primary care givers.

There were a total of 5 assessment checklist were developed, covering the competencies of primary care givers. The each assessment checklist had 10 steps, each with a score ranging from 0 to 10.

The range of assessment checklist items the step performed gets 1 mark and the step not performed gets 0 mark. For each checklist the maximum score was 10 and minimum score was 0.

Criteria range:

Maximum Score : 40

Minimum score :0

TABLE NO. 4 Categorization of the Competency Score according to the Percentage

Category	Competency Score
Poor	< 50%
Moderate	50-75%
Good	>75%

TABLE NO. 5 Data collection tools and technique used for data collection

S.NO.	DATA COLLECION TOOLS	PURPOSE	TECHNIQUE USED
1.	Structured interview schedule	To collect demographic/personal data	Interviewing
2.	Knowledge Questionnaire	For assessing the level of knowledge.	Interviewing
3.	Competency Checklist	For assessing the competencies	Observation

CRITERIA CHECKLIST FOR THE TOOL DEVELOPMENT

A criteria checklist was created to ensure that the tool's material was accurate, relevant, and acceptable.

CONTENT VALIDITY OF THE TOOL

Validity is the degree to which an tool measures what it was meant to measure. Content effectiveness refers to how well the elements in an instrument accurately represent the universe of content. Their comments are taken into account, and changes are put into the tool's final preparation.

RELIABILITY

The degree to which a measurement, instrument, or test produces consistent results after repeated administration is known as reliability.

Depending on the nature of the tool and components of the dependability concept, the reliability of a measuring tool can be judged in terms of stability, equivalence, and internal consistency.

The test was test-retest approach was used to determine the stability in the current study.

TABLE NO. 6 Reliability of the Tools

TOOL	METHOD	RELIABILITY
Knowledge Questionnaire	Test-retest reliability	0.80
Competency Checklist	Test-retest reliability	0.82

DEVELOPMENT OF HANDS ON TRAINING PROGRAMME

Hands-on Training Programme refers to an educational or instructional method that emphasizes practical experience and direct engagement in performing tasks, rather than just theoretical learning. In such programs, participants actively practice skills in a controlled or real-life setting, allowing them to develop competence, confidence, and proficiency through repeated, supervised application.

Key Features of a Hands-on Training Programme:

- **Skill-Based Learning:** Focuses on acquiring specific skills through doing.
- **Active Participation:** Learners are directly involved in performing tasks or procedures.
- **Guidance and Supervision:** Usually led by an instructor or expert who provides feedback and support.
- **Realistic Environment:** Often conducted in settings that simulate or replicate real-world scenarios (e.g., clinical skills labs, workshops, field training).
- **Immediate Feedback:** Allows for correction and reinforcement of learning on the spot.

The following were the procedures taken to prepare for the hands on training programme:

- Literature review.
- Outlining the content's outline.
- Content preparation and organizing.
- Choosing an instructional approach and audiovisual aids
- Getting ready for the last session.

LITERATURE REVIEW

A detailed literature review on under five childhood illnesses and knowledge & competencies of primary care givers was conducted using research and non-research materials, internet sites, journals, books, and other sources.

Outlining the content's outline:

The general and particular objectives regarding the under five childhood illnesses and knowledge & competencies of primary care givers, as well as the time, place, and size of the group, and the duration of the sessions, were all outlined in the framework of the Hands on training programme.

Content preparation and organizing:

The material of the prevention and management of under five childhood illnesses and knowledge & competencies of primary care givers was created and structured under several sections in accordance with the stated objectives.

Choosing an instructional approach and audiovisual aids:

Discussion was used as the mode of education, with charts, posters, and a content brochure also presented to the subjects.

Preparation of the final hands on training session:

At the start of the hands on training session, a general and specific goal was stated. The prevention and management of under five childhood illnesses session document was organised under numerous themes.

VALIDITY OF THE HANDS ON TRAINING SESSION MATERIAL:

The Guide and Co-guide professionals in the field of nursing specialized in Child health nursing were consulted for content validation of the hands on training session. Expert suggestions and recommendations were taken into account when revising the hands on training content on prevention and management of under five childhood illnesses.

PROCESS OF DATA COLLECTION FOR THE MAIN STUDY

The first step in using statistics to solve a problem is to collect data. It is the procedure for obtaining subjects and gathering data for a research project. The particular steps for gathering data vary every study and are dependent on the research design and measurement methodology.

Permission was sought from the Pradhan of the selected communities prior to gathering the data. The data was obtained after the sample gave their informed consent, which was done in accordance with study ethics.

The primary care givers were promised that the information they submitted would be kept private and anonymous. The subjects' information was gathered by the researcher. From April 7, 2025, through May 3, 2025, data was collected. The sample size chosen for this study is 120 primary care givers (60 in the experimental group and 60 in the control group) who were met the requirements for inclusion criteria. The data from the sample was collected using demographic factors, the Knowledge questionnaire, and the checklist for assessing competencies.

On the first day of data collection to primary caregivers in the experimental group, data was collected and hands on training session regarding prevention and management of under five childhood illnesses. The session lasted between 25 to 30 minutes. Hands on training was provided to primary care givers on the first day of data collection in order to assess knowledge and competencies for management and prevention of under five childhood illnesses. In the control group, primary care givers does not received any type of hands on training session. The respondents were thanked for their cooperation and patience as the data collection process came to an end.

A DATA ANALYSIS PLAN

The act of organizing and synthesizing analysis refers to the process of analyzing research data in order to answer research issues and validate hypotheses.

The collected information will be evaluated using descriptive and inferential statistics in order to meet the study's objectives. The law of probability underpins inferential statistics and are used to infer population (parameters) from sample (statistic) from which data was gathered.

The researcher creates a master score sheet to collect the information. The frequency and percentages would be used to describe the study subjects' responses to demographic factors. Mean, median, and standard deviation will be used to examine Knowledge and competencies of the primary care givers.

The significance of the variation of between the experimental and control group scores will be determined by using the t-test and the Chi-square test was done to see the relationship and association with the selected demographic factors and the primary care givers knowledge score and competency scores. The result will be significant at 0.05 level. Tables and graphs were used to display the findings of the calculations.

RESULTS

TABLE NO. :1 Frequency and Percentage Distribution of Demographic Characteristics of primary caregivers in Experimental andmControl Group N=120

S.NO.	SAMPLE CHARACERISTICS	EXPERIMENTAL GROUP (n1=60)		CONTROL GROUP (n2=60)		TOTAL (N=120)	
		f	%	f	%	f	%
1	Age (in years)						
1.1	18-24 years	13	21.7	12	20	25	20.8
1.2	25-34 years	15	25	14	23.3	29	24.2
1.3	35-44 years	13	21.7	21	35	34	28.3
1.4	45 years and above	19	31.7	13	21.7	32	26.7
2	Gender						
2.1	Male	34	56.7	36	60	70	58.3
2.2	Female	26	43.3	24	40	50	41.7
3	Age of Child						
3.1	0 to 1 years	12	20	18	30	30	25.0
3.2	1 to 2 years	12	20	8	13.3	20	16.7
3.3	2 to 3 years	16	26.7	14	23.3	30	25.0
3.4	3 to 4 years	9	15	9	15	18	15.0
3.5	4 to 5 years	11	18.3	11	18.3	22	18.3
4	Relation with Child						
4.1	Mother	21	35	16	26.7	37	30.8
4.2	Father	13	21.7	14	23.3	27	22.5
4.3	Grandparent	12	20	14	23.3	26	21.7
4.4	Others	14	23.3	16	26.7	30	25.0

5	Educational level						
5.1	No formal education	14	23.3	5	8.3	19	15.8
5.2	Primary education	9	15	16	26.7	25	20.8
5.3	Middle stage education	9	15	10	16.7	19	15.8
5.4	Secondary education	9	15	7	11.7	16	13.3
5.5	Senior secondary education	6	10	5	8.3	11	9.2
5.6	Graduation	6	10	9	15	15	12.5
5.7	Above Graduation	7	11.7	8	13.3	15	12.5
6	Residence						
6.1	Urban area	22	36.7	25	41.7	47	39.2
6.2	Sub –urban area	21	35	17	28.3	38	31.7
6.3	Rural area	17	28.3	18	30	35	29.2
7	Type of Family						
7.1	Joint Family	19	31.7	24	40	43	35.8
7.2	Nuclear family	15	25	24	40	39	32.5
7.3	Extended Family	26	43.3	12	20	38	31.7
8	Occupation						
8.1	Student	18	30	14	23.3	32	26.7
8.2	Working	18	30	28	46.7	46	38.3
8.3	Home maker	24	40	18	30	42	35.0
9.	Income of family (in Rupees)						
9.1	Up to 5000	19	31.7	19	31.7	38	31.7
9.2	5000-10000	16	26.7	14	23.3	30	25.0
9.3	10001-20000	15	25	16	26.7	31	25.8
9.4	Above 20001	10	16.6	11	18.3	21	17.5
10.	Number of Children						
10.1	1	13	21.7	17	28.3	30	25.0
10.2	2	15	25	12	20	27	22.5
10.3	3	15	25	18	30	33	27.5
10.4	>3	17	28.3	13	31.7	30	25.0
11.	Sex of the Child						
11.1	Male	25	41.7	28	46.7	53	44.2
11.2	Female	35	58.3	32	53.3	67	55.8
12.	Childbirth Order						
12.1	1st child	14	23.3	17	28.3	31	25.8

12.2	2nd child	19	31.7	13	21.7	32	26.7
12.3	3rd child	11	18.3	17	28.3	28	23.3
12.4	>3rd child	16	26.7	13	21.7	29	24.2
13.	Family Size						
13.1	< 4	26	43.3	25	41.7	51	42.5
13.2	> 4	34	56.7	35	58.3	69	57.5
14.	Source of Information						
14.1	Family and friends	21	35	18	30	39	32.5
14.2	Social media	21	35	20	33.3	41	34.2
14.3	Others	18	30	22	36.7	40	33.3

Table 1 presents the demographic characteristics of the 120 primary caregivers enrolled in the study, divided equally between the experimental and control groups. Most caregivers were in the age bracket of 25 to 44 years, aligning with the typical parenting age group. A slight male predominance (58.3%) reflects evolving caregiving roles beyond traditional maternal care. Most caregivers were caring for children under three years, a critical age for early intervention in childhood illnesses. Mothers made up the largest category of caregivers, but notable participation from fathers, grandparents, and others indicates shared caregiving responsibilities. Educational attainment varied widely, with 15.8% of participants having no formal education. This underscores the need for practical, non-textual training interventions. The population was well-distributed across urban (39.2%), sub-urban (31.7%), and rural (29.2%) settings, supporting the study's external validity. Family structures were also varied, with a balance between joint, nuclear, and extended families, indicative of the cultural diversity within communities in Delhi NCR. Occupationally, caregivers were distributed among students (26.7%), homemakers (35%), and working individuals (38.3%), highlighting the varying availability of time and access to resources. About one-third of the participants belonged to low-income groups ($\leq$ ₹5000/month), showing socioeconomic vulnerability. Most families were large (≥ 4 members), and the number of children per household was mostly more than one, suggesting increased caregiving demands. The sex distribution of children was nearly equal, and childbirth order was relatively balanced across first to higher-order births. Most caregivers reported obtaining health information from family, social media, or other informal sources, indicating limited access to formal training or structured health education.

SECTION: 2

FINDINGS RELATED TO THE EVALUATION OF THE EFFECTIVENESS IN TERMS OF KNOWLEDGE REGARDING THE PREVENTION AND MANAGEMENT OF SPECIFIC UNDER FIVE CHILDHOOD ILLNESSES AMONG PRIMARY CAREGIVERS IN THE EXPERIMENTAL AND CONTROL GROUP

TABLE No. : 2 Frequency and Percentage Distribution of Pre-Test and Post-Test Knowledge Score of Primary Care givers in Experimental and Control Group N=120

KNOWLEDGE SCORE	EXPERIMENTAL GROUP (n1=60)				CONTROL GROUP (n2=60)			
	PRE - TEST (DAY 1)		POST - TEST (DAY-21)		PRE - TEST (DAY 1)		POST - TEST (DAY-21)	
	F	%	F	%	F	%	F	%
GOOD KNOWLEDGE (>75%)	0	0	20	33.3	0	0	0	0
MODERATE KNOWLEDGE (50-75%)	30	50	25	41.7	33	55	32	53.3
POOR KNOWLEDGE (<50%)	30	50	15	25	27	45	28	46.7

KNOWLEDGE SCORE ; MINIMUM = 0 ,MAXIMUM = 26

Table 2 indicate a notable improvement in knowledge levels among the experimental group after the intervention. On Day 1, both the experimental and control groups had no participants in the "good knowledge" category (>75%), with the experimental group showing an equal split between moderate (50%) and poor knowledge (50%), while the control group had slightly more moderate (55%) than poor (45%) knowledge levels. By Day 21, 33.3% of the experimental group had achieved good knowledge, and the percentage with poor knowledge dropped to 25%, showing a shift from poor to higher knowledge levels. In contrast, the control group showed negligible change, with no participants attaining good knowledge and minimal differences in the moderate (53.3%) and poor (46.7%) categories. This suggests that the intervention applied to the experimental group had a positive impact on improving knowledge.

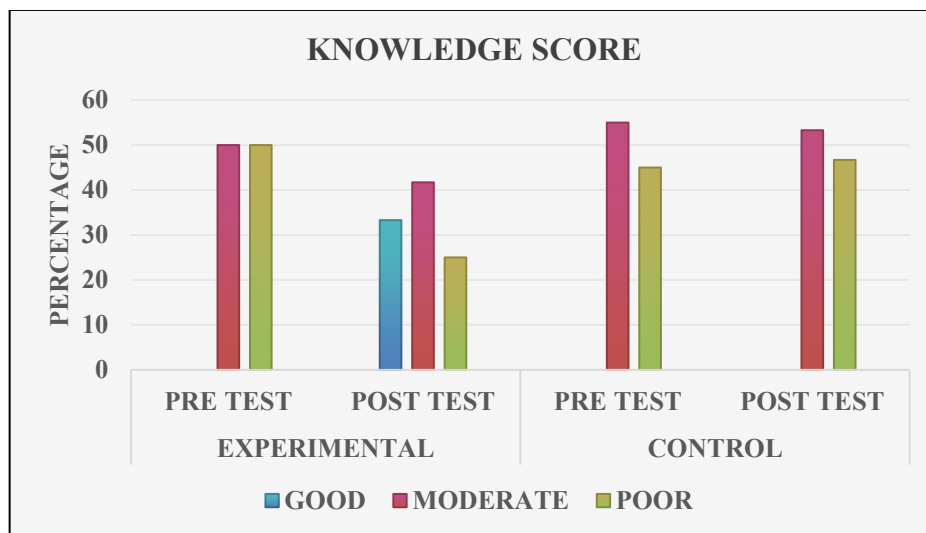


Figure 15: Bar diagram showing percentage distribution of primary care givers according to their knowledge score in experimental and control group.

TABLE No. : 3 Mean, Median, and Standard Deviation of Pre-Test And Post-Test Knowledge Score of Primary Caregivers in Experimental and Control Groups N=120

GROUP		MEAN	MEDIAN	STANDARD DEVIATION
EXPERIMENTAL GROUP (n1=60)	PRE - TEST (DAY-1)	13.3	13.5	2.06
	POST - TEST (DAY-21)	17.05	18.0	4.47
CONTROL GROUP (n2=60)	PRE - TEST (DAY-1)	13.47	13.0	2.60
	POST - TEST (DAY-21)	13.23	13.0	2.17

KNOWLEDGE SCORE ; MINIMUM = 0 ,MAXIMUM = 26

The statistical data show a significant improvement in the knowledge scores of the experimental group following the intervention. The experimental group's mean score increased from 13.3 on Day 1 to 17.05 on Day 21, with the median rising from 13.5 to 18.0, indicating not only a higher average score but also a shift in the overall distribution toward better performance. Additionally, the standard deviation increased from 2.06 to 4.47, suggesting greater variability in post-test scores—likely due to some participants achieving substantially higher scores. In contrast, the control group showed no meaningful change, with a slight decrease in mean score from 13.47 to 13.23 and a consistent median of 13.0. The small change in standard deviation (2.60 to 2.17) indicates a stable distribution with little variation. Overall, these results support the effectiveness of the intervention in enhancing knowledge among the experimental group.

TABLE NO. 4 Test of Normalcy by Shapiro-Wilk test on Pre-test Knowledge score in experimental and control group N=120

Group	Shapiro-Wilk Statistic	p-value
EXPERIMENTAL GROUP (n1=60)	0.967	0.102NS
CONTROL GROUP	0.973	0.201NS

(n2=60)		
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NS- Non Significant as p-value >0.05

The Shapiro-Wilk test results for both the experimental and control groups indicate that the data are approximately normally distributed. The Shapiro-Wilk statistic for the experimental group is 0.967 with a p-value of 0.102, and for the control group, it is 0.973 with a p-value of 0.201. Since both p-values are greater than the conventional significance level of 0.05, the null hypothesis of normality is not rejected (denoted by "NS" for not significant). Therefore, it can be concluded that the data for both groups follow a normal distribution, justifying the use of parametric statistical tests for further analysis.

TABLE NO. 5 Mean, Mean Difference, Standard Error, and 't' value of Pre-Test Knowledge Score of Primary Care Givers In Experimental And Control Groups N=120

GROUP	PRE-TEST KNOWLEDGE SCORE			t - VALUE	VALUE
	MEAN	MEAN DIFFERENCE	STANDARD ERROR OF MEAN DIFFERENCE		
EXPERIMENTAL GROUP (n1=60)	13.3	0.13	0.43	0.311	0.756NS
CONTROL GROUP (n2=60)	13.47				

NS- Non Significant as p-value >0.05

The independent samples t-test comparing the pre-test knowledge scores between the experimental and control groups shows no statistically significant difference. The experimental group had a mean score of 13.3, while the control group had a slightly higher mean of 13.47. The mean difference was only 0.13, with a standard error of 0.311. The resulting t-value of 0.43 and p-value of 0.756 (NS – not significant) indicate that the difference in baseline knowledge scores between the two groups was not statistically significant. This suggests that both groups started with comparable levels of knowledge prior to the intervention.

TABLE NO. 6 Mean, Mean Difference, Standard Error, and 't' value of Pre-Test and Post-Test Knowledge Score of Primary Care Givers In Experimental and Control Groups N=120

GROUPS		KNOWLEDGE SCORE			t VALUE	P- VALUE
		MEAN	MEAN DIFFERENCE	STAN DARD ERROR		
EXPERIMENTAL GROUP (n1=60)	PRE- TEST	13.33	3.72	0.619	6.00	0.001*
	POST- TEST	17.05				
CONTROL GROUP (n2=60)	PRE- TEST	13.47	0.23	0.419	0.557	0.579NS
	POST- TEST	13.23				

* - Significant as p-value <0.05, NS- non significant as p-value >0.05

The paired t-test results indicate a statistically significant improvement in knowledge scores within the experimental group following the intervention. The mean score increased from 13.33 (pre-test) to 17.05 (post-test), with a mean difference of 3.72 and a standard error of 0.619. The t-value of 6.00 and p-value of 0.001 (marked with *) confirm that this improvement is highly significant. In contrast, the control group showed no significant change in knowledge scores, with a pre-test mean of 13.47 and a post-test mean of 13.23. The mean difference of 0.23, standard error of 0.419, t-value of 0.557, and p-value of 0.579 (NS – not significant) indicate that the slight decrease in scores was not meaningful. These findings strongly suggest that the intervention was effective in enhancing knowledge among the experimental group.

SECTION: 3

FINDINGS RELATED TO THE EVALUATION OF THE EFFECTIVENESS OF HANDS ON SKILL TRAINING PROGRAMME REGARDING THE PREVENTION AND MANAGEMENT OF SPECIFIC UNDER FIVE

CHILDHOOD ILLNESSES IN ENHANCING THE COMPETENCIES AMONG PRIMARY CAREGIVERS IN THE EXPERIMENTAL AND CONTROL GROUPS

TABLE No. : 7 Frequency and Percentage Distribution of Pre-Test and Post-Test Competency Score of Primary Care givers in Experimental and Control Group

N=120

COMPETENCY SCORE	EXPERIMENTAL GROUP (n1=60)				CONTROL GROUP (n2=60)			
	PRE - TEST (DAY 1)		POST - TEST (DAY-21)		PRE - TEST (DAY 1)		POST - TEST (DAY-21)	
	F	%	F	%	F	%	F	%
GOOD	0	0	12	20	0	0	0	0
MODERATE	32	53.3	35	58.3	22	36.7	27	45
POOR	28	46.7	13	21.7	38	63.3	33	55

COMPETENCY SCORE ; MINIMUM = 0 ,MAXIMUM = 40

The competency score results show a clear improvement in the experimental group following the intervention, while the control group showed minimal change. On Day 1, both groups had no participants in the "good" competency category. By Day 21, 20% of the experimental group had achieved good competency, with a decrease in poor competency from 46.7% to 21.7% and a slight increase in moderate competency (from 53.3% to 58.3%). In contrast, the control group remained with 0% in the good category, and although there was a modest rise in moderate competency (from 36.7% to 45%), the proportion of participants with poor competency remained high (55%). These results suggest that the intervention had a positive effect on enhancing competency in the experimental group.

TABLE No. : 9 Mean, Median, and Standard Deviation of Pre-Test And Post-Test Competency Score of Primary Caregivers in Experimental and Control Groups N=120

GROUP		MEAN	MEDIAN	STANDARD DEVIATION
EXPERIMENTAL GROUP (n1=60)	PRE - TEST (DAY-1)	20.25	21.0	3.59
	POST - TEST (DAY-21)	24.42	23.0	6.65
CONTROL GROUP (n2=60)	PRE - TEST (DAY-1)	19.62	20.0	2.76
	POST - TEST (DAY-21)	19.52	20.0	3.51

COMPETENCY SCORE ; MINIMUM = 0 ,MAXIMUM = 40

The descriptive statistics reveal a marked improvement in competency scores within the experimental group after the intervention. The mean score rose from 20.25 on Day 1 to 24.42 on Day 21, and while the median slightly decreased from 21.0 to 23.0, the higher standard deviation (from 3.59 to 6.65) indicates greater variability, suggesting that some participants achieved notably higher scores. In contrast, the control group showed virtually no change, with the mean score decreasing slightly from 19.62 to 19.52 and the median remaining stable at 20.0. The minor increase in standard deviation (from 2.76 to 3.51) suggests minimal variation in outcomes. These results support the conclusion that the intervention was effective in improving competency levels among the experimental group.

TABLE NO. 10 Mean, Mean Difference, Standard Error, and 't' value of Pre-Test and Post-Test Competency Score of Primary Care Givers In Experimental and Control Groups N=120

GROUPS	COMPETENCY SCORE			t VALUE	P-VALUE
	MEAN	MEAN DIFFERENCE	STANDARD ERROR		

EXPERIMENTAL GROUP (n1=60)	PRE-TEST	20.25	4.17	0.99	4.217	0.001*
	POST-TEST	24.42				
CONTROL GROUP (n2=60)	PRE-TEST	19.62	0.10	0.58	0.170	0.866NS
	POST-TEST	19.52				

* - Significant as p-value <0.05, NS- non significant as p-value >0.05

The paired t-test results for competency scores reveal a significant improvement in the experimental group after the intervention, while the control group showed no meaningful change. In the experimental group, the mean competency score increased from 20.25 (pre-test) to 24.42 (post-test), with a mean difference of 4.17, a standard error of 0.99, a t-value of 4.217, and a highly significant p-value of 0.001 (*). This indicates that the intervention had a statistically significant positive effect on competency. Conversely, the control group showed a negligible change in scores, with a mean difference of just 0.10, a t-value of 0.170, and a non-significant p-value of 0.866, suggesting no real improvement. These results support the effectiveness of the intervention in enhancing competency among participants in the experimental group.

SECTION: 4

FINDINGS RELATED TO THE ASSOCIATION BETWEEN KNOWLEDGE LEVELS AMONG PRIMARY CAREGIVERS IN THE EXPERIMENTAL GROUP AFTER THE ADMINISTRATION OF HANDS ON SKILL TRAINING PROGRAMME REGARDING PREVENTION AND MANAGEMENT OF SPECIFIC UNDER FIVE CHILDHOOD ILLNESSES AND SELECTED DEMOGRAPHIC VARIABLES

TABLE No. : 11 Chi-square value showing association between post-test knowledge score with selected demographic variables of primary care givers in experimental group n1=60

Demographic variables of primary care givers in experimental group III-60							
S.no.	Variables	Post Test Knowledge Score			χ^2 -value	dF	p-value
		Poor	Moderate	Good			
1	Age (in years)						
1.1	18-24 years	4	5	3	1.282	6	0.973NS
1.2	25-34 years	3	5	6			
1.3	35-44 years	5	9	7			
1.4	45 years and above	3	6	4			
2	Gender						
2.1	Male	11	13	12	1.778	2	0.411NS
2.2	Female	4	12	8			
3	Age of Child						
3.1	0 to 1 years	4	5	9	10.167	8	0.254NS
3.2	1 to 2 years	3	3	2			
3.3	2 to 3 years	6	6	2			
3.4	3 to 4 years	0	5	4			
3.5	4 to 5 years	2	6	3			
4	Relation with Child						
4.1	Mother	5	5	6	3.416	6	0.755NS
4.2	Father	3	6	5			
4.3	Grandparent	2	6	6			

4.4	Others	5	8	3			
5	Educational level						
5.1	No formal education	3	1	1	13.415	12	0.340N S
5.2	Primary education	5	8	3			
5.3	Middle stage education	2	6	2			
5.4	Secondary education	1	2	4			
5.5	Senior secondary education	1	1	3			
5.6	Graduation	2	2	5			
5.7	Above Graduation	1	5	2			
6	Residence						
6.1	Urban area	3	11	11	5.470	4	0.242
6.2	Sub –urban area	6	8	3			
6.3	Rural area	6	6	6			
7	Type of Family						
7.1	Joint Family	7	7	10	6.300	4	0.178N S
7.2	Nuclear family	3	13	8			
7.3	Extended Family	5	5	2			
8	Occupation						
8.1	Student	4	7	3	1.525	4	0.822N S
8.2	Working	7	10	11			
8.3	Home maker	4	8	6			
9.	Income of family (in Rupees)						
9.1	Up to 5000	5	7	7	9.797	6	0.133N S
9.2	5000-10000	7	3	4			
9.3	10001-20000	2	10	4			
9.4	Above 20001	1	5	5			
10.	Number of Children						
10.1	1	3	6	8	4.564	6	0.601N S
10.2	2	3	4	5			
10.3	3	5	10	3			
10.4	>3	4	5	4			
11.	Sex of the Child						
11.1	Male	6	11	11	0.897	2	0.638N S
11.2	Female	9	14	9			
12.	Childbirth Order						
12.1	1st child	3	10	4	3.430	6	0.753N S
12.2	2nd child	4	4	5			
12.3	3rd child	4	6	7			

12.4	>3rd child	4	5	4			
13.	Family Size						
13.1	< 4	6	9	10	0.919	2	0.632N S
13.2	> 4	9	16	10			
14.	Source of Information						
14.1	Family and friends	8	4	6	7.945	4	0.094N S
14.2	Social media	2	12	6			
14.3	Others	5	9	8			

*P<0.05= significant at 0.05 level

The chi-square analysis explores whether demographic and socioeconomic factors are associated with differences in post-test knowledge scores categorized as poor, moderate, or good. The variables examined include participants' age, gender, child's age, relation to the child, education level, residence, family type, occupation, family income, number of children, sex of the child, childbirth order, family size, and source of information.

For age groups (18-24, 25-34, 35-44, 45+ years), the distribution of knowledge levels showed no significant differences ($\chi^2 = 1.282$, df = 6, p = 0.973), indicating that knowledge improvement after the intervention was consistent across ages.

Similarly, gender did not influence knowledge scores significantly ($\chi^2 = 1.778$, df = 2, p = 0.411). Both males and females exhibited comparable knowledge outcomes.

The age of the child (ranging from newborns to 5 years) also had no significant effect ($\chi^2 = 10.167$, df = 8, p = 0.254), suggesting caregivers' knowledge gain was not dependent on the child's age.

Relationship to the child (mother, father, grandparent, others) showed no significant association ($\chi^2 = 3.416$, df = 6, p = 0.755) with knowledge levels.

Regarding educational attainment, participants ranged from no formal education to above graduation. Despite this wide range, no significant differences were observed ($\chi^2 = 13.415$, df = 12, p = 0.340), indicating education level did not strongly impact post-test knowledge.

Participants' residence (urban, suburban, rural) also showed no statistically significant effect on knowledge scores ($\chi^2 = 5.470$, df = 4, p = 0.242).

The type of family (joint, nuclear, extended) showed no significant association with knowledge ($\chi^2 = 6.300$, df = 4, p = 0.178).

Occupation categories (student, working, homemaker) similarly had no meaningful effect ($\chi^2 = 1.525$, df = 4, p = 0.822).

Analysis of family income in different brackets (up to 5,000 rupees to above 20,001 rupees) showed no significant differences in knowledge scores ($\chi^2 = 9.797$, df = 6, p = 0.133).

The number of children in the family (1, 2, 3, >3) did not relate significantly to knowledge ($\chi^2 = 4.564$, df = 6, p = 0.601).

The sex of the child (male or female) had no significant effect ($\chi^2 = 0.897$, df = 2, p = 0.638).

Childbirth order also showed no significant impact on knowledge ($\chi^2 = 3.430$, df = 6, p = 0.753).

Family size (less than or greater than 4 members) was not significantly associated with knowledge outcomes ($\chi^2 = 0.919$, df = 2, p = 0.632).

Finally, sources of information (family/friends, social media, others) had no statistically significant association with knowledge levels ($\chi^2 = 7.945$, df = 4, p = 0.094).

In summary, the detailed analysis indicates that none of the demographic or socioeconomic factors studied had a statistically significant influence on post-test knowledge scores. This implies that the intervention's effect on improving knowledge was consistent and not dependent on these background characteristics, suggesting broad applicability and effectiveness across diverse participant groups.

SUMMARY

This quasi-experimental study aimed to evaluate the effectiveness of a Hands-on Skill Training Programme on the prevention and management of specific under-five childhood illnesses, focusing on enhancing the knowledge and competencies of primary caregivers in selected communities of Delhi NCR.

The study was designed with a non-equivalent control group pre-test/post-test format and included 120 primary caregivers selected through purposive sampling (60 in experimental and 60 in control group).

The intervention included structured training sessions covering critical childhood illnesses such as diarrhoea, pneumonia, fever, otitis media, and malnutrition. The training emphasized practical demonstrations, direct participation, and supervised skill performance. Data collection tools included a structured knowledge questionnaire and competency checklists, administered before and after the training to assess improvement.

MAJOR FINDINGS

SECTION 1: Findings related to sample characteristics

A total of 120 primary caregivers participated in the study, divided equally between the experimental group (n=60) and the control group (n=60). The demographic data revealed:

Most caregivers were aged 25–44 years, indicating they belonged to the active parenting age group.

Males (58.3%) slightly outnumbered females (41.7%), highlighting evolving caregiving roles.

Children under 3 years of age made up the majority, which is a critical stage for child health interventions.

Mothers constituted the largest group of caregivers (30.8%), followed by fathers, grandparents, and others.

15.8% had no formal education, emphasizing the need for non-text-heavy, practical training.

The sample was spread across urban (39.2%), suburban (31.7%), and rural areas (29.2%), enhancing the external validity.

Caregivers were fairly distributed among joint (35.8%), nuclear (32.5%), and extended families (31.7%).

Low-income households ($\leq$ ₹5000/month) accounted for 31.7% of participants, pointing to socioeconomic vulnerability.

A majority of households had more than one child and larger family sizes (>4 members).

Information sources included family and friends (32.5%), social media (34.2%), and others (33.3%), indicating limited access to formal health education.

SECTION 2: Findings related to Effectiveness in terms of Knowledge

This section evaluated the impact of the hands-on training on caregivers' knowledge of under-five childhood illness prevention and management:

Pre-test knowledge scores were statistically similar between the experimental and control groups ($p = 0.756$), ensuring comparability.

Post-intervention, the experimental group's mean knowledge score rose from 13.3 to 17.05, a statistically significant improvement ($p = 0.001$).

In the experimental group:

Those with good knowledge ($>75\%$) increased from 0% to 33.3%

Poor knowledge decreased from 50% to 25%

The control group showed no significant change, indicating that improvements were due to the intervention.

The normal distribution of knowledge scores (Shapiro-Wilk test) validated the use of parametric tests.

SECTION 3: Findings related to Effectiveness in terms of Competency

This section assessed how the training affected caregivers' practical competencies in managing under-five illnesses:

Pre-test competency scores were not significantly different between groups ($p = 0.281$).

The experimental group's mean competency score improved from 20.25 to 24.42 ($p = 0.001$).

In the experimental group:

Good competency increased from 0% to 20%

Poor competency reduced from 46.7% to 21.7%

The control group showed minimal change (mean: 19.62 to 19.52; $p = 0.866$).

Increased standard deviation post-intervention suggested some participants made large competency gains.

SECTION 4: Findings related to association between knowledge and demographic variables

Chi-square analysis found no significant association between post-test knowledge scores and: Age, gender, education, income, number of children, residence, or family structure

This implies the training program was equally effective across all demographic categories, regardless of caregivers' background.

SECTION 5: Findings related to association between competency and demographic variables

Chi-square analysis found no significant association were found between post-test competency scores and: Age, gender, educational level, family income, occupation, or other demographics

This indicates the training program's effectiveness in improving competencies was consistent across different socioeconomic and cultural profiles.

CONCLUSION

The study concludes that the Hands-on Skill Training Programme was highly effective in significantly enhancing the knowledge and competencies of primary caregivers in managing common under-five childhood illnesses. The findings of

this study affirm that a structured, hands-on skill training programme is a highly effective method for enhancing both knowledge and practical competencies among primary caregivers concerning under-five childhood illnesses. The training, which included practical demonstrations and interactive sessions, not only improved caregivers' understanding of disease symptoms and home-based management but also empowered them to respond effectively to health issues in early childhood.

One of the most notable aspects of the study is the significant improvement in the post-test scores of the experimental group in contrast to the control group, highlighting the direct impact of the intervention. The transformation of participants from categories of poor and moderate knowledge to moderate and good knowledge, and similarly in competencies, demonstrates that even caregivers with limited formal education can grasp critical healthcare concepts when taught through engaging, skill-based approaches.

Furthermore, the lack of association between demographic variables and the improvement in knowledge and skills suggests the universal applicability and inclusiveness of the training programme. This underscores its potential for scalability and implementation across different socio-economic and cultural contexts without needing extensive customization.

This research emphasizes the importance of incorporating practical, skills-based caregiver education into community health programs. Nursing professionals, health educators, and public health administrators should consider integrating such modules into ongoing maternal and child health initiatives to strengthen grassroots-level healthcare delivery. The successful outcomes of this study support policy changes that endorse widespread adoption of structured skill training interventions to enhance early childhood care and reduce morbidity and mortality rates in under-five populations.

DISCUSSION

The present study aimed to assess and evaluate the effectiveness of a Hands-on Skill Training Programme on the prevention and management of specific under-five childhood illnesses among primary caregivers in Delhi NCR. This discussion synthesizes key findings from the analysis and aligns them with existing research to contextualize the outcomes.

Demographic Profile of Participants

Understanding the demographic distribution of study participants is essential for interpreting outcomes and assessing the generalizability of interventions. In this study, the sample of 120 primary caregivers was diverse in terms of age, gender, education, residence, and socioeconomic status.

A substantial proportion of participants were aged between 25–44 years, representing the typical reproductive and parenting age group. This aligns with national patterns where the majority of primary caregivers fall into this age range, as reported in the National Family Health Survey (NFHS-5) [1].

The presence of male caregivers (58.3%) was notable and suggests a gradual shift in caregiving responsibilities from traditionally female-centric roles toward more inclusive participation. Sharma and Mehta (2021) described similar observations in urban India, highlighting increased paternal involvement in childcare and health-seeking behaviors [2]. This shift can be harnessed by designing gender-inclusive training programs that account for the evolving dynamics of family caregiving.

Education levels varied widely, with 15.8% of caregivers having no formal education. This highlights the necessity of developing training modules that are not overly reliant on textual content. Visual aids, practical demonstrations, and culturally relevant simulations can be more effective in such populations. This is supported by findings from Sinha et al. (2020), who emphasized that low-literacy caregivers benefited more from interactive and pictorial health education interventions [3].

Additionally, participants were drawn from urban (39.2%), sub-urban (31.7%), and rural (29.2%) areas, offering a heterogeneous sample that enhances the external validity of the study. This representation ensures that the findings are not limited to a single demographic stratum and may be generalizable across different types of communities, as similarly reported in the work of Suryawanshi et al. (2016) [4].

Effectiveness of Training Programme on Knowledge Enhancement

One of the key objectives of the study was to assess the impact of the Hands-on Skill Training Programme on the knowledge levels of primary caregivers regarding the prevention and management of specific under-five illnesses. The results demonstrated a statistically significant improvement in knowledge within the experimental group (mean pre-test score 13.3 to post-test 17.05, $p < 0.001$).

These findings are consistent with earlier work by Shrestha et al. (2019), who reported similar outcomes in Nepal when mothers received targeted health education on diarrheal disease management [5]. Knowledge gains in their cohort were significant and sustained for at least one-month post-intervention, comparable to the 21-day follow-up in the present study. Another comparable study by Ayaya and Esamai (2017) in Kenya found that caregiver education significantly improved recognition and home management of pneumonia and diarrhea two leading causes of under-five mortality in low-resource settings [6].

Moreover, the effectiveness of structured, participatory training programs has also been validated in India. Awasthi et al. (2020) noted that community health education using flipcharts, role plays, and demonstrations significantly increased knowledge about signs of respiratory illness and diarrhea among caregivers in Uttar Pradesh [7].

The current findings underscore the critical role that focused training interventions can play in bridging the knowledge gap, especially in underprivileged or low-literacy populations.

Impact of the Training Programme on Caregiver Competency

Beyond knowledge acquisition, the training also aimed to improve caregivers' practical competencies. Results indicate that the mean competency score in the experimental group rose significantly from 20.25 to 24.42 post-intervention ($p < 0.001$). This improvement reinforces the value of experiential learning in public health education.

Bhutta et al. (2013) argue that hands-on, scenario-based training has a greater impact on behavior change and skill acquisition than didactic learning alone, particularly in maternal and child health interventions [8]. The present study's findings align with this assertion, showcasing how practical sessions—demonstrating techniques like oral rehydration solution (ORS) preparation or temperature measurement—translate to measurable competence.

Similarly, Mahmud et al. (2018) in Bangladesh reported that caregivers who received supervised practice sessions were more adept at recognizing warning signs of febrile illnesses in children and demonstrated better home care practices compared to those who only received information leaflets [9].

The shift from "poor" to "good" competency among caregivers in the experimental group (from 0% to 20%) and the marked reduction in poor competency scores (from 46.7% to 21.7%) demonstrate that practical training not only informs but also transforms caregiving practices. This transformation is especially critical in settings with limited access to health facilities.

Comparative Effectiveness Between Groups

While the experimental group showed significant improvements, the control group displayed negligible change in both knowledge and competency domains. The control group's mean knowledge score remained statistically unchanged (13.47 to 13.23), as did their competency score (19.62 to 19.52), both with non-significant p -values.

This differential outcome underlines the effectiveness of the training intervention and the inadequacy of relying on informal sources or passive learning. Similar conclusions were drawn in a study by Jain and Mathur (2019), who found that caregivers exposed only to printed material or verbal advice from peers showed minimal improvement in managing pediatric fever and dehydration [10].

It is well established in behavioral science that passive absorption of information rarely leads to behavior change without experiential reinforcement. This theory supports the observed differences in outcomes between groups and justifies continued investment in structured training programs for community caregivers.

Association Between Demographics and Post-Test Scores

One of the most striking observations was that demographic variables—such as caregiver age, gender, education, occupation, income, type of residence, and even the number of children—had no statistically significant association with post-test knowledge or competency scores. This suggests the intervention was uniformly effective across diverse subgroups.

This finding holds considerable importance for public health programming. It indicates that such skill-based interventions can be scaled across populations regardless of socioeconomic disparities. Similar results were reported by Suryawanshi et al. (2016), where educational interventions were equally effective among low- and high-literacy caregivers in Maharashtra [4].

Moreover, the lack of correlation between education level and knowledge gain challenges traditional assumptions that formal education is a prerequisite for effective training. As long as the training is contextually relevant and practically oriented, caregivers with little or no schooling can achieve comparable outcomes.

Interestingly, although not statistically significant, caregivers who reported using social media and digital platforms as sources of information showed a slight trend toward better competency outcomes. Jain and Mathur (2019) also noted similar trends in their randomized study on the use of mobile health applications for parental education [10].

IMPLICATIONS

NURSING PRACTICE

- Enhances nurses' role in community outreach and health promotion.
- Empowers nurses to act as trainers and mentors for caregivers at the grassroots level.
- Reinforces the need for practical, culturally sensitive approaches to health education.
- Improves early identification and basic management of common childhood illnesses.
- Facilitates community-level disease prevention and child survival strategies.
- Builds trust between healthcare providers and community members through interaction.
- Encourages home-based care practices, reducing dependency on tertiary care.
- Promotes timely referrals and follow-up care through knowledgeable caregivers.
- Increases involvement of nurses in child welfare and maternal-child health programs.
- Strengthens the preventive and promotive aspect of pediatric nursing.

NURSING EDUCATION

- Encourages curriculum revision to include hands-on community training modules.
- Promotes simulation-based and experiential learning in nursing programs.
- Helps students understand real-world applications of pediatric and community nursing.
- Inspires nursing faculty to adopt active learning and skills demonstration methods.
- Reinforces the importance of health teaching and caregiver training as core competencies.

Enables integration of caregiver education into community health nursing clinical postings.
Offers a practical model for project-based learning for nursing students.
Encourages development of teaching aids and visual tools tailored for low-literacy populations.
Enhances nursing students' confidence and communication in public health settings.
Bridges the gap between theoretical knowledge and field practice.

NURSING RESEARCH

Encourages further evidence-based research on skill-based training interventions in community health settings.
Supports the need for longitudinal studies to assess long-term retention of knowledge and skills.
Opens avenues for comparative studies between traditional and hands-on teaching methods.
Provides baseline data for conducting randomized controlled trials in rural and urban settings.
Promotes interdisciplinary research involving public health, pediatrics, and education.
Highlights the importance of evaluating caregiver training as a preventive strategy.
Facilitates the development of new research tools to measure competency in caregivers.
Encourages qualitative studies to explore caregivers' perceptions and barriers post-intervention.
Validates the use of quasi-experimental designs in community-based nursing interventions.
Stimulates policy-driven research aimed at integrating such programs into public health schemes.

NURSING ADMINISTRATION

Promotes implementation of structured caregiver training programs in primary health centers.
Advocates for policy-level inclusion of caregiver education in maternal and child health services.
Assists administrators in allocating resources for community-based skill training.
Strengthens collaboration between nurses and ASHA/Anganwadi workers for outreach.
Provides a framework for integrating community training in health department mandates.
Encourages monitoring and evaluation systems to assess caregiver competencies post-training.
Helps in designing standardized training protocols for nursing staff.
Supports inclusion of such programs in national child health initiatives like IMNCI.
Guides health administrators in staff planning and capacity building efforts.
Enhances accountability and outcome-based performance indicators in community health programs.

LIMITATIONS

The study was limited to selected communities in Delhi NCR, affecting the generalizability of results to other regions.
A relatively small sample size may limit the statistical power of the findings.
The quasi-experimental design lacks randomization, introducing potential selection bias.
Short follow-up duration may not reflect long-term retention of knowledge and skills.
Self-reported assessments could introduce social desirability bias in evaluating knowledge and competencies.
Variability in the baseline education levels and caregiving experience of participants may have influenced training outcomes.

RECOMMENDATIONS

1. A study can be undertaken to assess the effectiveness of a similar hands-on skill training programme in diverse geographical locations to enhance the generalizability of findings.
2. Future research may be conducted using a randomized controlled trial (RCT) design to determine the impact of randomization on the effectiveness of caregiver training programmes.
3. A longitudinal study can be carried out to evaluate the long-term retention of knowledge and skills among primary caregivers following hands-on skill training.
4. Another study can be conducted to assess the effectiveness of mobile-based or digital follow-up modules in reinforcing caregivers' knowledge and competencies over time.
5. A qualitative exploratory study may be conducted to understand caregivers' perceptions, challenges, and barriers in implementing learned skills in home-based child care.
6. Further research is needed to evaluate the cost-effectiveness and scalability of community-based skill training programmes in resource-limited settings.
7. A comparative study may be conducted to assess the impact of training programmes involving both primary and secondary caregivers (e.g., fathers, grandparents) on child health outcomes.
8. An interventional study may be undertaken to develop and assess the effectiveness of pictorial or audiovisual educational tools tailored to caregivers with low literacy levels.

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