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A Study to Assess the Effectiveness of an Informational Booklet on Knowledge Regarding First Aid for Snake Bite Among People in Selected Rural Community Area of Kanpur Dehat, U.P.

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Abstract

Snake bite is a common and frequently devastating environmental and occupational health problem, particularly in rural areas of tropical developing countries. Despite its significant contribution to morbidity and mortality, snake bite remains a neglected public health issue. Snake venoms contain a variety of proteins and peptide toxins with specific actions on different tissue receptors, making snake bite management clinically challenging. Immediate and appropriate first aid plays a crucial role in reducing complications and mortality following snake envenomation. The present study aimed to assess the pre-intervention and post-intervention knowledge levels regarding first aid measures for snake bite among people in a selected rural community of Kanpur Dehat, to evaluate the effectiveness of an informational booklet, and to determine the association between selected demographic variables and pretest knowledge scores. A pre-experimental one-group pretest–posttest research design was adopted. A total of 60 participants were selected using non-probability purposive sampling. Data were collected using a demographic questionnaire and a structured knowledge questionnaire. The findings revealed that before the intervention, 75% of participants had poor knowledge, and 25% had average knowledge regarding snake bite first aid. After exposure to the informational booklet, 93.3% of participants demonstrated good knowledge, while only 6.7% had average knowledge, indicating a significant improvement. None of the participants had prior experience of snake bite, and neighbors or relatives were the most common sources of information. The study concludes that the informational booklet was highly effective in improving knowledge regarding first aid management of snake bite among people in rural communities.

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Keywords: First aid, informational booklet, knowledge improvement, rural community, snake bite

INTRODUCTION

"Secure Hands, Saving Lives"

The word "snake" can refer to the reptile, snake, any member of about 19 reptile families that have no limbs, voice, external ears, or eyelids, and only one functional lung cylinder body. Approximately 2,900 snake species exist, and most live in the tropics [1].

India is home to diverse snake populations, including many venomous species. Although the

exact number of snake species is constantly being updated, it is estimated that over 300 species are found in India. Among these, the 'big four,' including Russell's viper, Indian cobra, Saw-scaled viper, and Indian krait (common krait), are responsible for a significant number of snake bite-related deaths. These four snakes are responsible for approximately 46,000–60,000 deaths annually in India.

Snakebite is a common and frequently devastating environmental and occupational disease, especially in rural areas of tropical developing countries. Its importance in public health has largely been ignored in medical science. Snake venoms are rich in protein and peptide toxins that are specific to a wide range of tissue receptors, making them clinically challenging and scientifically fascinating, especially for drug design. Although the full burden of human suffering attributable to snake bites remains obscure, hundreds of thousands of people are envenomed, and tens of thousands are killed or maimed by snakes every year. Preventive efforts should be aimed at educating affected communities to use proper footwear and to reduce the risk of contact with snakes to a minimum through understanding snake behavior. To treat envenoming, the production and clinical use of antivenom must be improved. Increased collaboration between clinicians, epidemiologists, and laboratory toxicologists should enhance the understanding and treatment of envenomation [2, 3].

Background of Study

Snakebite is a common and frequently devastating environmental and occupational disease, especially in rural areas of tropical developing countries. Its importance in public health has largely been ignored in medical science. Snake venoms are rich in protein and peptide toxins that are specific to a wide range of tissue receptors, making them clinically challenging and scientifically fascinating, especially for drug design. Although the full burden of human suffering attributable to snake bites remains obscure, hundreds of thousands of people are envenomed, and tens of thousands are killed or maimed by snakes every year. Preventive efforts should be aimed at educating affected communities to use proper footwear and to reduce the risk of contact with snakes to a minimum through understanding snake behavior. To treat envenoming, the production and clinical use of antivenom must be improved. Increased collaboration between clinicians, epidemiologists, and laboratory toxicologists should enhance the understanding and treatment of envenomation [1].

A descriptive cross-sectional study was conducted to determine the extent to which nursing students in the Southern Province of Sri Lanka knew about identifying venomous snakes and providing first aid for snakebites. Snakebites are a serious health issue worldwide, and the World Health Organization suggests that training on snakebite prevention and management should be included in nursing education. This study included 425 nursing students from different educational institutions. Data were collected using a pretested questionnaire. Most of the students (82.6%) were between 24 and 26 years of age, and the majority were female. The results showed that 64.7% of the students had poor knowledge about identifying venomous snakes, whereas 57.4% had a fair level of knowledge about first aid for snakebites. Only 39.8% had good knowledge of first aid methods. The study concluded that students' knowledge of identifying venomous snakes was insufficient, but their knowledge of first aid was at a moderate level [4].

Need of Study

WHO estimated that around 5.4 million people are bitten by snakes every year, with 81,000–130,000 deaths (WHO, 2023). Many of these cases occur in rural settings, where medical care is delayed, and snake venom can cause paralysis, internal bleeding, tissue damage, or death. Many people use traditional or unscientific methods (e.g., cutting wounds, sucking venom, using tourniquets, or binding with cloth). A study helps dispel these myths and promote evidence-based knowledge of what not to do can save lives. Teaching first aid for snake bites improves general safety and health literacy within communities [2].

A study was conducted to assess how many people from various professions, such as teachers, students, farmers, and medical residents, know about snakes and how to manage snakebite incidents.

The survey used open-ended questions on personal experiences with snakes and knowledge of first aid. The findings revealed that proper knowledge about snakebite management was very poor or completely lacking for most participants, including medical professionals. Only 13% knew about the 'big four' venomous snakes in India, 18% were aware of the term 'dry bite' (a bite without venom), and only 21% knew about the anti-snake venom (ASV) used in India. Approximately 39% of people knew where to find traditional healers, 12% were aware of any bedside test to diagnose snakebite, and only 11% knew about the measure of venom strength of the Indian cobra. This study highlights that most people had incorrect or incomplete basic knowledge about local snakes, first aid for snake bites, and support systems for victims. It recommends more awareness programs and better education on snakebite management to build essential life-saving skills, especially in areas where people lack such knowledge [5].

This retrospective cross-sectional study was conducted to understand the pattern, demographics, outcomes, and treatment details of snakebite cases reported in an emergency department in rural Nepal from 2015 to 2016. We reviewed the medical records of 137 patients who had a history of snakebites. The majority of the victims were women (53.3%), with an average age of approximately 35 years. Most snakebites occurred in the upper limbs (59%), followed by the lower limbs (35.1%). A significant number of bites (36.2%) occurred at night, between 8 PM and 3 AM. Common symptoms included drooping eyelids (ptosis) and double vision (diplopia) in 20.4% and 15.3% of patients, respectively. Of all the patients, 28.5% were admitted to the hospital, 47.4% were discharged after treatment, and 8.8% unfortunately died. ASV was administered to 30 patients, with a recovery rate of 76.7%.

The study concluded that snakebites are a major health issue in rural Nepal, but with timely and proper treatment, they can be effectively managed. The study emphasized the need to spread awareness about first aid and treatment through social media and radio in rural communities [6].

AIM of Study

The primary aim of this study was to assess the effectiveness of an informational booklet in enhancing knowledge regarding the first aid management of snake bites among the target population. Snakebites continue to be a significant public health concern, especially in rural and tribal areas where access to immediate medical care is limited and awareness about proper first aid is often inadequate. Delay or improper handling of snakebites can lead to severe complications, long-term disabilities, or even death.

This study was designed to evaluate whether an educational intervention, in the form of a simple, easy-to-understand informational booklet, can significantly improve awareness and understanding of the correct first aid procedures to be followed immediately after a snakebite. This study seeks to identify existing gaps in knowledge, deliver structured information through the booklet, and measure the difference in knowledge levels before and after the intervention.

Additionally, the study aimed to promote preventive practices and dispel common myths and misconceptions related to snake bites. The ultimate goal is to empower individuals, especially those living in high-risk areas, with life-saving knowledge that can be applied promptly and correctly in emergencies, thereby reducing morbidity and mortality associated with snake bites.

Objectives

- To assess the pre-intervention knowledge level, people regarding first aid measures for snake bites in selected rural communities in Kanpur Dehat.
- To assess people's post-intervention knowledge level after exposure to an informational booklet.
- To evaluate the effectiveness of an informational booklet on knowledge regarding the first aid of snake bites.
- To determine the association between selected demographic variables and pretest knowledge score.

Operational Definitions

- *Effectiveness*: Effectiveness is defined as the degree to which something is successful in producing a desired result or outcome. This refers to the ability to achieve the intended goals or objectives [7]. Effectiveness refers to how well an object works or achieves its intended goal.
- *Informational booklet*: An informational booklet is a small, printed, or digital publication that provides detailed information on a specific topic, designed to educate or inform a particular audience in a simple, organized, and accessible format [8]. It is a printed material that helps provide information regarding a particular topic, event, or service.
- *Knowledge*: Knowledge is the awareness, understanding, and information gained through experience or education [9]. Knowledge refers to the information, understanding, and skills acquired through experience, learning, and observation.
- *First aid of snake bite*: First aid for snakebite refers to the immediate, initial care given to a person bitten by a snake to reduce the spread of venom, prevent complications, and stabilize the victim until professional medical help is available. It is immediate care given to someone in the incident of a snakebite [10].
- *Rural community*: A rural community is defined as a group of people living in a geographical area located outside towns and cities, typically characterized by a small population size, limited infrastructure, agricultural-based livelihood, and close social relationships [11]. Rural communities are less-developed areas or villages.

Hypotheses

- *H1:* There will be a significant difference between pretest and posttest knowledge regarding first aid for snake bites after the administration of the informational booklet.
- *H2:* There is a significant association between pretest knowledge scores and the selected demographic variables.

Assumptions

People in rural communities have less knowledge regarding first aid for snake bites. The informational booklet will increase the knowledge of the rural community regarding first aid for snake bites.

Delimitations

- The study was limited to a specific selected rural community in Kanpur Dehat.
- The study will be delimited to assessing the effectiveness of the informational booklet solely on the "knowledge" regarding first aid of snake bite.
- The study will include only community members who are able to understand and speak Hindi.

CONCEPTUAL FRAMEWORK

This study will be guided by Lewin's Change Theory, specifically focusing on the "Unfreeze–Change–Refreeze" model adapted to the educational intervention shown in Figure 1.

Unfreeze: This phase represents the initial state in which participants possess existing knowledge (and often misconceptions) of snakebite first aid. The pretest assessment serves to quantify this baseline knowledge and highlight the "felt need" or gap in current understanding, thereby creating readiness for change. Existing traditional beliefs and harmful practices represent the "unfrozen" state that needs to be addressed.

Change: This is the intervention phase in which an informational booklet is introduced. The booklet acts as the "change agent," providing new, accurate, and evidence-based information on first aid for snakebite. Through the process of reading, understanding, and internalizing the content of the booklet, participants were expected to acquire new knowledge and modify their existing cognitive structures

regarding snakebite first aid. Simple language, illustrations, and clear instructions in the booklet facilitate cognitive restructuring.

Refreeze: This phase aims to solidify newly acquired knowledge. The posttest assessment measures the extent to which new information has been internalized and integrated into the participants' understanding. The informational booklet, as a tangible resource, can serve as a continuous reference, reinforcing the learned concepts and helping to "refreeze" the new, correct knowledge. This phase implies that participants will retain and potentially apply this knowledge in real-life situations. While this study primarily measures knowledge, the goal of "refreezing" is the adoption of correct practices.

Lewin's Model of Change

A review of the literature is a summary of all the reviews from various studies related to the current study carried out by a researcher [4].

REVIEW OF LITERATURE

The review of literature is divided into two parts as follows.

Review of literature on the prevalence rate of snake bites. Review of literature on effectiveness and knowledge regarding the first aid of snake bites.

Review of Literature on the Prevalence Rate of Snake Bite

A retrospective descriptive study of snakebites in the medicine wards of Lapidary Hospital, West Bengal," West Bengal, is one of the highest snakebite prevalence states in India, and 13 species of venomous snake have been reported. 75% of the patients were from rural areas, including tea gardens. In the 30–49-year age group, 71.2% were males and 70% were affected. Seasonal variation in snake bite was observed, with a peak in June–July. Seventy percent of the snake bites had no features of envenomation, and 60% of the bites occurred during the daytime, with the lower limbs being bitten the most (83%). Seventy percent of snakebite cases were hospitalized within 6 hours of the bite, and 88% of them attended government hospitals without visiting any traditional healer [12].

A hospital-based cross-sectional study was conducted in a tertiary care hospital in eastern India. All children under 12 years of age admitted to our pediatric ward with an alleged history of snake bite between June 2021 and May 2022 were included in the study after obtaining informed consent from their guardians. A total of 94 patients were included in the study.

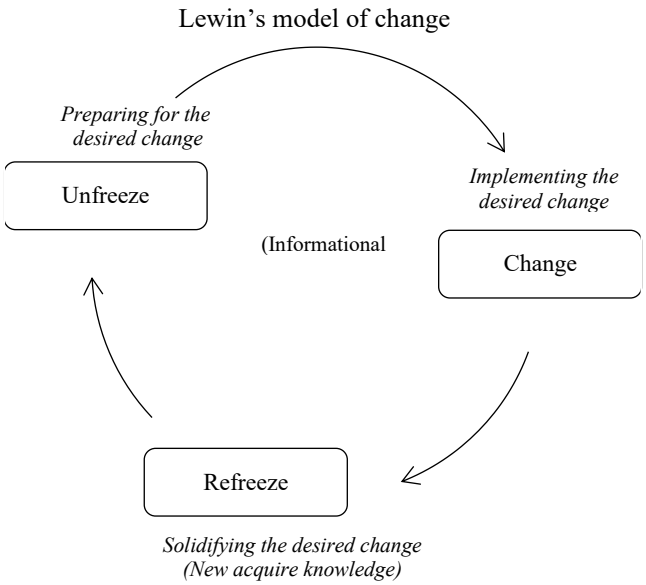

Figure 1. Conceptual Framework specifically focusing on the "Unfreeze–Change–Refreeze" model.

Most patients were > 5 years of age, with a mean age of 7.74 years. The incidence of snakebites was higher in males (61.70%) than in females (38.29%). Cases were more frequently reported in rural areas (84.04%) than in urban areas (15.96%). Bites were more common in the lower extremities (74.47%) than in the upper extremities (25.53%), and between June and August (38.3%). Most patients reported to the hospital within 6 hours of the bite (71.3%). 42.55% were non-poisonous bites and 57.45% and poisonous snakebites, respectively. ASV was administered to 57.45% of patients.

Approximately 18.08% of patients required invasive ventilation, and 23.4% required non-invasive ventilatory support. Eventually, 94.68% of patients were discharged successfully, and the remaining patients were discharged with complications or referred to a higher center [13].

A study was conducted on "clinical epidemiology profile and outcome of the snake victims in Kashmir valley." This retrospective and prospective study was conducted at the Sher-I-Kashmir Institute. In this study of 108 snake bite cases, most of the victims were men (57.4%) and were mainly between the ages of 20 and 50 years (68.51%). The majority of victims (93.5%) came from rural areas, and most snake bites occurred during the daytime (87.96%), mainly affecting the lower limbs (63.88%). A large number of cases (98.14%) occurred between May and October, the peak agricultural season. Most of the people affected were farmers. Bleeding was observed in 13.88% of patients, and problems with blood clotting (INR > 1.2) were observed in 63.88% of cases. Some patients (8.33%) exhibited signs of nerve-related paralysis. The death rate recorded in this study was 2.8%. *Conclusion:* Snake bites are a common problem in valleys, especially for people who work in farming, orchards, and forests in rural areas. Most snake bites occur during the busy farming season from May to October [14].

A cross-sectional retrospective record-based study among the patients presented with a history of snakebites at the Basaveshwara Medical College Hospital and research center. This study looked at 96 people who were treated for snakebites at a hospital between 2019 and 2021. Most snakebite The victims were young men aged 21–30 years old. The most common site for a snake bite is the lower limb. Krait bites were the most common, almost 50% of the patients took 1–4 hours to reach the hospital, while only 35% managed to get there within an hour, 82% recovered with the treatment. *Conclusion:* Many patients had severe symptoms, but only a few reached the hospital quickly. This finding highlights the importance of awareness [15].

Review of Literature on Effectiveness and Knowledge Regarding First Aid of Snake Bite

A study was conducted on "Effect of nursing intervention on educating rural women regarding snake bite's prevention," first aid and treatment, among 106 rural women who came to the health center to provide immunization their children was taken setting in Tala district in Menoufia Governorate Egypt. Quasi-experimental study, by the interviewing questionnaire, after receiving nursing intervention the total knowledge of the studied women about snake bite were highly statistically improved pretest 0.0% and posttest 31.1%. *Conclusions and recommendations:* Computer-based educational nursing intervention was successful in improving the overall knowledge of the studied rural women regarding snakebite symptoms, first aid, prevention, and treatment. Therefore, this study recommends that education programs and guidebooks to increase awareness about snakebite symptoms, first aid, prevention, and treatment are essential to help people manage snakebites and prevent complications, especially in rural areas [16].

A study was conducted on "Knowledge about snake bite among rural people" among the rural people aged 18–50 years in four different villages of Raijgonj upazila, Sirajganj district of Bangladesh, Descriptive type of cross-sectional study, age group (20–30) years which was 150 (65.0%), 140 (60%) knew that two punctured wound is the evidence of venomous snake bite, farmers were high risk of snake bite 124 (53.0%), 184 (80%) were in favor of application of tourniquet [17].

A study was conducted on "knowledge on prevention and management of snake bite among rural area of West Bengal," 134 participants were included in the study, it a observational descriptive study

first aid measure such as application of tourniquet that was seen only 4.4%, 71.6% believed in sucking the venom out of the wound, It was noted that higher education status, improved social class had better knowledge score of snake bite prevention and management as compared to their counterparts and this association was found to be statistically significant ($P < 0.001$). *Conclusion:* Knowledge of the study subjects on snakebite and its prevention is good, but a large number of participants still have inadequate knowledge of snakebite and its prevention [18].

A study was conducted on Inadequate knowledge about snakebite envenoming symptoms and application of harmful first aid methods in the community in high snakebite incidence areas of Myanmar, 4,276 rural residents of Kyaukse and Madaya townships in the Mandalay region were recruited by cluster sampling, involving random selection of 144 villages and random sampling of 30 households from each village, incidence 116/100,000, working in the field and forest 88%, only 39% knew about the correct methods of first aid, 60% mentioned tourniquet, 88% said that they would take a snakebite victim to government hospital, The community is aware of snakebites as a major public health issue and know how to prevent them. However, the high incidence of snakebites points to a lack of application of preventive methods. *Conclusion:* Rural people still have a lack of proper knowledge about the identification of venomous snakes, first aid, and treatment of snake bite [19].

A Pilot study was conducted to assess the knowledge of people from various professions, including teachers, students, farmers, and medical residents, regarding snake and snakebite management. A well-structured questionnaire was used to gather information regarding their experiences. The results showed that most participants had very limited or incorrect knowledge. Only 13% were aware of the big four venomous snakes found in India, 18% had heard of dry bite, and 21% knew about antivenom, 12% were aware of any bedside test to diagnose snake bite. *Conclusion:* People lack essential knowledge across all group alarming. It recommends improving education and training on snakebite prevention and first aid through school and professional curricula, which could help develop the necessary skills in communication that are currently lacking in knowledge awareness [20].

A study was conducted on "To assist myths regarding snake bite and to evaluate the effectiveness of the plant teaching program on prevention and first aid management of snake bite." The study was conducted using interviews that included questions about the participants' backgrounds, beliefs, knowledge, and actions related to snake bites. Data were collected from 60 farmers, chosen using a systematic method between January 4th and 23, 2021. After obtaining official approval, the results showed that many farmers believe in false ideas about snake bites. Before the training, only seven farmers had good knowledge about snake bites, but after the training, this number increased to 20. The average knowledge score went from 40.35 to 20.45. After receiving educational training, the farmers showed a big improvement in what they know and how they handle snake bite situations [21].

A cross-sectional study was conducted on Assessment of knowledge about first aid diagnosis and prevention snake bite among medical students, using semi-structured questionnaires with 321 enrolled students, cum praising 230 males 91 females who were categorized into clinical and non-clinical the result indicate that 61.4% of the student in the clinical group while 38.6% non-clinical group A key findings was that clinical students demonstrated better knowledge of first aid for snake bite compare to their non-clinical counter parts. Both clinical and non-clinical groups showed satisfactory knowledge regarding snakebite diagnosis based on recognition of signs and symptoms, and both groups were well informed about prevention measures. *Conclusion:* Both clinical and non-clinical students possess educational knowledge concerning snakebite diagnoses and prevention measures [22].

A cross-sectional study was conducted on knowledge of local snake, first aid and prevention of snakebites among community health workers and community members survey involved 312 community health workers and 379 community members. Participants' knowledge was assessed using questions with scores ranging from 0% to 100%, categorized as inadequate (0–49%), fairly adequate (50–70%), and adequate (>70%). The participants (66.6%) were females, with a median age of 39.

Despite a high willingness to view snake pictures (89%), only a very small percentage of the participants (1.3%) had adequate knowledge of snake identification. Similarly, less than 5% had adequate knowledge of first aid measures, and only 14.3% had adequate knowledge of prevention practices. Overall, less than 1% of the participants demonstrated adequate knowledge across all three assessment sections, with no significant difference in knowledge levels between community health workers and community members. The study concluded that both community health workers and community members had inadequate knowledge regarding local snake species, first aid for snakebites, and preventive measures [23].

A study was conducted on "Effectiveness and demonstration in snakebite first aid in farmer groups," a pre-experimental research design with a one-group pretest–posttest approach. The study involved a sample of 65 farmer groups selected via a simple random sampling technique. The demonstration method served as the independent variable, with farmers' knowledge of snakebite first aid as the dependent variable, assessed using a knowledge questionnaire, and analyzed with a Paired T-test. The results of the data analysis, indicated by a *p*-value of 0.0000.05, demonstrated a significant influence of the demonstration method on farmers' knowledge levels regarding snakebite first aid. The study concluded that health education employing demonstration methods can effectively enhance farmers' knowledge about snakebite first aid, with the hope that this improved understanding will enable them to apply the knowledge gained when encountering snakebite victims in their fields [24].

A study was conducted on the knowledge of prevention and first aid measures of snake bite among farmers a descriptive study design. The researchers conveniently sampled 30 male weavers (farmers) to participate. Their knowledge was assessed using a questionnaire and Venous Clinical Severity Score assessment. The findings indicated that among the 30 participants, 14 (46.66%) possessed adequate knowledge, 16 (53.33%) had moderate knowledge, and no participants demonstrated inadequate understanding (0%). In conclusion, this study successfully assessed knowledge regarding snakebite prevention and first aid among the surveyed male farmers, highlighting varying levels of understanding within the group [25].

A cross-sectional study was conducted on knowledge, attitude, and practices regarding snakes and snake bites among students of industrial training institute, data was collected using a predesigned and pretested oral questionnaire. The findings revealed a low level of knowledge regarding snake identification, with the spectacled cobra being the most correctly identified snake (92.3%). A prevalent myth is that snakes are found in milk (60%). There was inadequate knowledge regarding proper first aid and treatment measures for snakebites. While participants from urban areas and those with higher secondary education demonstrated significantly greater knowledge, the overall conclusion was that participants possessed inadequate knowledge of snake identification, were influenced by common myths, and lacked awareness of proper first aid measures, although they generally knew to seek hospital care [26].

METHODOLOGY

Research methodology is defined as the design or strategy of a research study that provides a guideline that directs the research steps. The research study process enabled systematic data collection (Figure 2).

The research methodology is a way to systematically solve and assess the research problem; the rationale for the choice of research approach, tool, setting, sampling technique, pilot study, data collection, and plan of data analysis are included in this chapter.

Research Approach

The quantitative approach was used to determine the effectiveness of informational booklets on knowledge regarding first aid for snake bites among people in selected rural community areas of Kanpur Dehat.

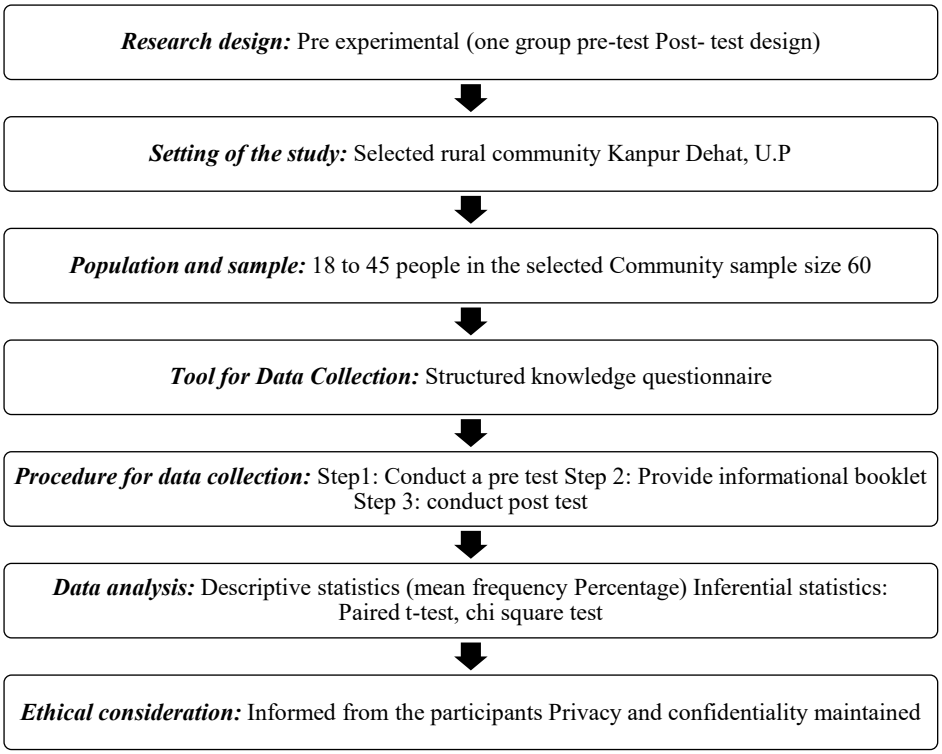

Figure 2. Methodology flowchart.

Table 1. Research design.

Pretest	Intervention	Posttest
O1	x	O2

Research Design

The research design used in this study was a pre-experimental design with a one-group pretest and posttest design to evaluate the effectiveness of informational booklets. This design is appropriate for assessing changes in knowledge before and after the intervention within a single group without a control group. (Table 1)

Independent Variables

Independent variable: Informational booklet on knowledge regarding first aid.

Dependent Variables

Knowledge regarding first aid for snake bite.

Research Setting

The study was conducted in a rural community in Kanpur Dehat, Uttar Pradesh, India. The area was chosen where the risk of snake bites was higher, awareness was limited, and there was a sufficient population.

Population

- The target population comprised individuals aged 18–45 years residing in rural areas where snake bites are a common health concern.
- This age group was chosen because individuals in this age range are often more active outdoors.
- This group is considered to be physically and mentally capable of understanding, retaining, and applying first aid information effectively.

Simple Size

The sample size for the study was determined to be 60 participants selected from the target population, determined using a power calculation to ensure adequate statistical power, 80% power at a 5% significance level.

Sampling Technique

A non-probability purposive sampling technique was used to select the participants who met the inclusion criteria.

Sample Size Calculation

Paired *t*-test, chi-square test.

Description of Tool

The tool consists of two sections.

Demographic Questionnaire

The demographic data consisted of the baseline information of individuals at Shivali regarding their age, gender, education, occupation, religion, type of family, and monthly income.

Structured Knowledge Questionnaire

A self-developed questionnaire was used to measure knowledge about first aid for snakebite, covering its general information, etiology, risk, sign symptoms, complications, first aid, prevention, and management. It consists of 20–30 multiple-choice questions, each scored as 1 (correct) or 0 (incorrect). Validated by experts in art therapy and education for content validity. A pilot test was conducted on a small group (10% of the sample) to ensure clarity and reliability (Cronbach's alpha of ≥ 0.7).

Ethical Considerations

- Approval will be obtained from the Institutional Ethical Committee of the selected rural area, and informed consent will be obtained from the participants.
- Participants will be informed of the study's purpose, procedures, risks, and benefits, ensuring confidentiality and voluntary participation.
- Privacy and confidentiality were maintained by assigning unique identifiers instead of names. Participation was voluntary, and participants could withdraw at any time without any consequences. The intervention poses minimal risk as first aid for snakebites.

Pilot Study

A pilot study was conducted in Shivali Kanpur Dehat, and people who were available in Shivali were selected for the pilot study. The effectiveness of informational booklets on knowledge regarding first aid for snake bites was assessed using a structured knowledge questionnaire carried out in the same way as a final study to test feasibility and practicability.

The effectiveness shows that the pretest mean was 9.17, SD 1.04, and the posttest mean was 23.8, SD 1.77; the t-value was 12.6, and the table value was 2.622.

Validity and Reliability

Validity

The structured knowledge questionnaire will be reviewed by an expert from the nursing and medical fields to ensure that they cover relevant aspects of first aid for snake bites.

Reliability

Cronbach's alpha was calculated for the knowledge questionnaire to ensure internal consistency (0.79).

Data Collection Procedure

Pretest Phase

A structured knowledge questionnaire will be administered to all participants to assess their baseline knowledge regarding the first aid of snake bites.

Intervention Phase

- After the pretest, each participant was provided with an informational booklet written in simple and understandable local language.
- The booklet contained pictorial explanations and covered key topics such as Identification of snake bites, first aid steps (Do's and Don'ts).
- Emergency management and the importance of hospital care.
- A short educational session (15–20 minutes) was conducted to explain the booklet content and clarify any doubts.

Posttest Phase

The same structured knowledge questionnaire was administered again as a posttest to assess the changes in knowledge.

Data Analysis Plan

The plan for data analysis involved both descriptive and inferential statistics, including mean, standard deviation, frequency, and percentage, which were used to summarize demographic data, pretest, and posttest scores.

Inferential Statistics

Paired t-Test

To compare pretest and posttest knowledge scores to determine the effectiveness of the informational booklet.

Chi-Square Test

To assess the association between demographic variables, age, gender, occupation, education, and knowledge/practice outcomes.

Effect Size

Cohen's d was calculated to measure the magnitude of the intervention's impact. Data were analyzed using statistical software (SPSS or Excel) at a 5% significance level ($p < 0.05$). The results are presented in tables and graphs for clarity.

DATA ANALYSIS, INTERPRETATION, AND DISCUSSION

Definition

"Analysis is the process of breaking a complex topic or substance into smaller parts to gain a better understanding of it."

***Section A*:** Demographic variables of people. The demographic data consisted of baseline information of people at Shivali regarding their age, religion, occupation, education, income, family type, no of children, experience of snake bite, source of information, regarding snake bite.

***Section B*:** It consists of a structured knowledge questionnaire regarding first aid for snakebites.

Section A: Demographic Profile of the Participants

Table 2 shows the frequency and percentage distributions of the sample according to the selected sociodemographic variables. Most of the participants (38.33%) belonged to the age group of 31–35 years, followed by 35–45 years (31.67%). All the respondents (100%) were Hindus. Regarding education, the majority of the participants (63.33%) had no formal education, while 21.67% had secondary education.

Table 2. Frequency and percentage distribution of samples on selected sociodemographic variables.

S.N.	Demographic variable	Frequency	Percentage%
1	***Age group***		
	a. 18–25	8	13.33
	b. 26–30	10	16.67
	c. 31–35	23	38.33
	d. 35–45	19	31.67
2	***Religion***		
	a. Hindu	60	100
	b. Muslim	0	0
	c. Christian	0	0
	d. Other	0	0
3	***Education***		
	a. No education	38	63.33
	b. Primary education	9	15
	c. Secondary education	13	21.67
	d. Graduation	0	0
4	***Occupation***		
	a. Agriculture	31	51.67
	b. Self-employer	6	10
	c. Private job	1	1.67
	d. Government job	2	3.33
	e. Housewife	20	33.33
5	***Income***		
	a. Less than 10000	43	71.67
	b. RS.10001–20000	7	11.67
	c. RS.20001–25000	7	11.67
	d. Above 25000	3	5
6	***Family Type***		
	a. Nuclear family	44	73.33
	b. Joint family	9	15
	c. Extended family	7	11.67
7	***Number of Children***		
	a. 0	9	15
	b. 1–2 children	34	56.67
	c. 3–4 children	10	16.67
	d. More than 4	7	11.67
8	***Experience***		
	a. Yes	0	0
	b. No	60	100
9	***Source of Information***		
	a. Newspaper, TV, radio	14	23.33
	b. Education by health c. Personal	10	16.67
	d. Neighbors, relative	30	50
	e. No information	6	10

In terms of occupation, more than half of the respondents (51.67%) were engaged in agriculture, and 33.33% were housewives. The majority of the participants (71.67%) had a monthly income of less than

10,000. Most respondents (73.33%) belonged to nuclear families, and more than half (56.67%) had one to two children.

None of the participants had previous experience with snakebites (100% reported no experience). Regarding the source of information about snake bites, half of the respondents (50%) received information from neighbors or relatives, followed by mass media, such as newspapers, television, and radio (23.33%), as depicted in Table 2.

Table 3 and Figure 3 show the percentage-wise distribution of people according to their age; 13.33% were aged between 18 and 25 years. years, followed by 16.67% between 26 and 30 years, 38.33% between 31 and 35 years, and 31.67% between 35 and 45 years.

Table 4 and Figure 4 show the percentage-wise distribution of people according to their religion, showing that 100% of people were Hindu.

Table 5 and Figure 5 show the percentage-wise distribution of people according to their education: most participants (63.33%) had no education, 15% had primary education, 21.67% had secondary education, and none were graduates.

Table 6 and Figure 6 show the percentage-wise distribution of people according to their occupation (51.67%): agriculture, 10% were self-employed, 1.67% were private jobs, 3.33% were government jobs, and 33.33% were housewives.

Table 3. Frequency and percentage distribution of people regarding their age.

S.N.	Age group	Frequency	Percentage%
a.	18–25	8	13.33
b.	26–30	10	16.67
c.	31–35	23	38.33
d.	35–45	19	31.67

Table 4. Frequency and percentage distribution of people regarding their religion.

S.N.	Religion	Frequency	Percentage%
a.	Hindu	60	100
b.	Muslim	0	0
c.	Christian	0	0
d.	Other	0	0

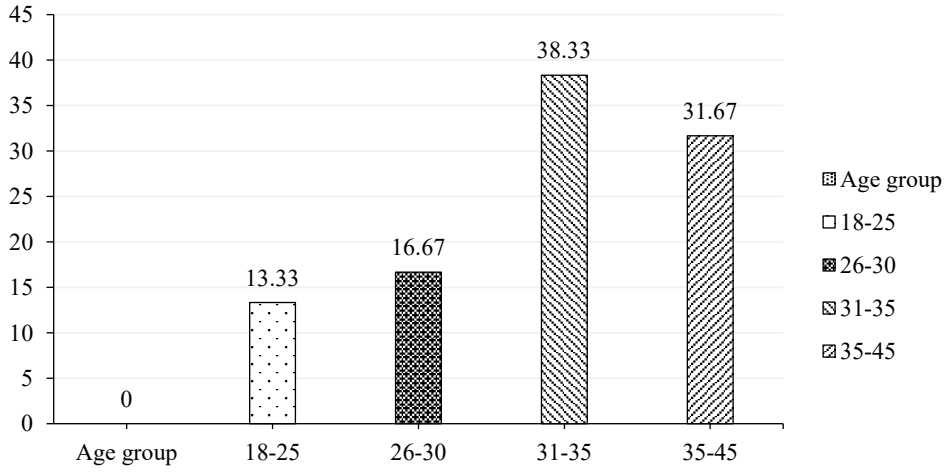

Figure 3. Bar diagram showing the frequency and percentage distribution of people regarding age.

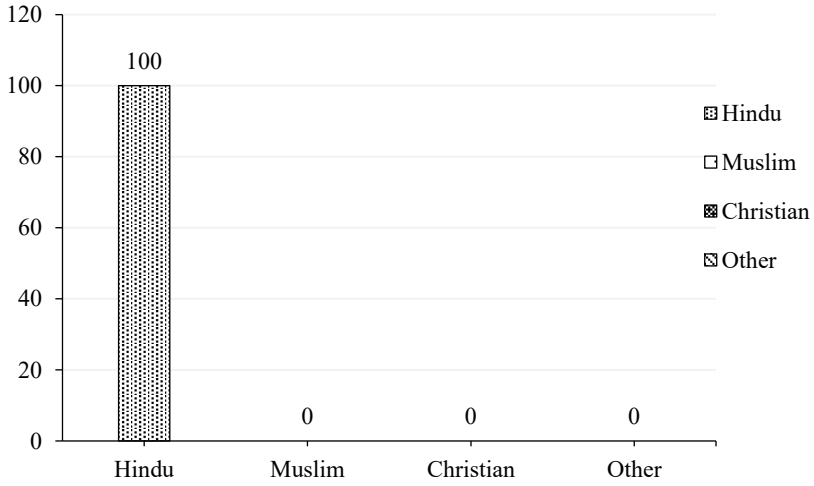

Figure 4. A bar diagram shows the frequency and percentage distribution of people regarding religion.

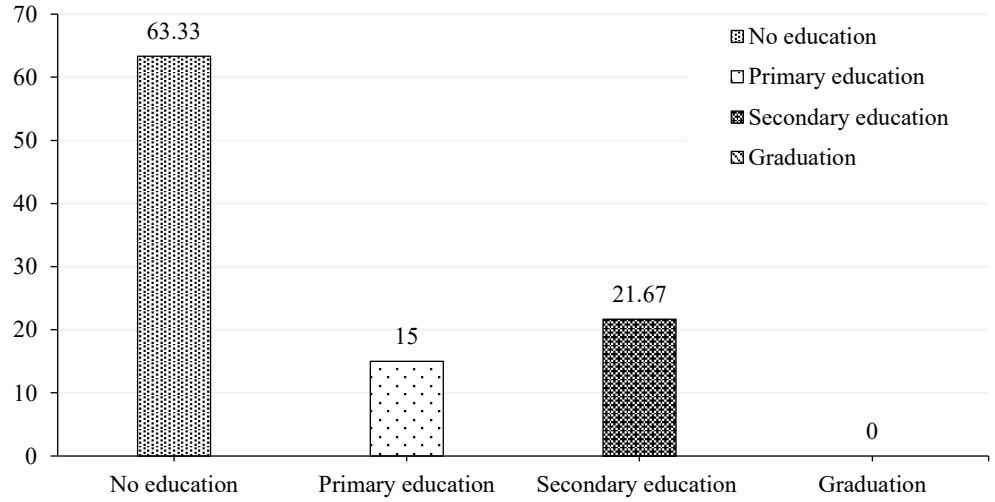

Figure 5. Bar diagram showing the frequency and percentage distribution of people regarding education.

Table 5. Frequency and percentage distribution of people regarding the education of the people.

S.N.	Education	Frequency	Percentage%
a.	No education	38	63.33
b.	Primary education	9	15
c.	Secondary education	13	21.67
d.	Graduation	0	0

Table 6. Frequency and percentage distribution of people regarding their occupation.

S.N.	Occupation	Frequency	Percentage%
a.	Agriculture	31	51.67
b.	Self-employer	6	10.00
c.	Private job	1	1.67
d.	Government job	2	3.33
e.	Housewife	20	33. 33

Table 7 and Figure 7 show the percentage-wise distribution of people according to their income, with most people (71.67%) having incomes less than 10,000, 11.67% earning 10,001–20,000, 11.67% earn 20,001–25,000, and 5% earn more than 25,000.

Table 8 and Figure 8 show the percentage-wise distribution of people according to their family type (73.33%) belonging to nuclear families, 15% of joint families, and 11.67% of extended families.

Table 9 and Figure 9 show the percentage-wise distribution of people according to their number of children (56.67%): three to four children, 15% one to two children, 16.67% no children, and 11.67% more than four children.

Table 10 and Figure 10 show the percentage-wise distribution of people according to their experience 100% of people have no experience regarding first aid for snake bite.

Table 11 and Figure 11 show the percentage-wise distribution of people according to their source of information: half of the people (50%) received information from neighbors/relatives, 23.33% from newspapers/TV/radio, 16.67% from health personnel, and 10% had no information.

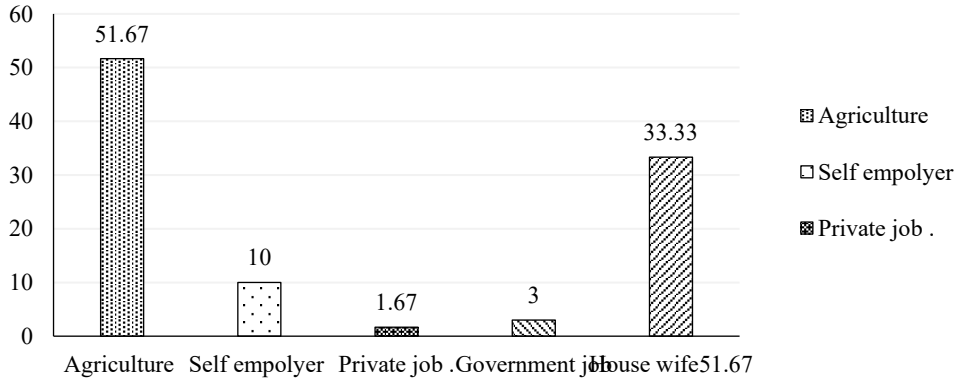

Figure 6. Bar diagram showing the frequency and percentage distribution of people regarding occupation.

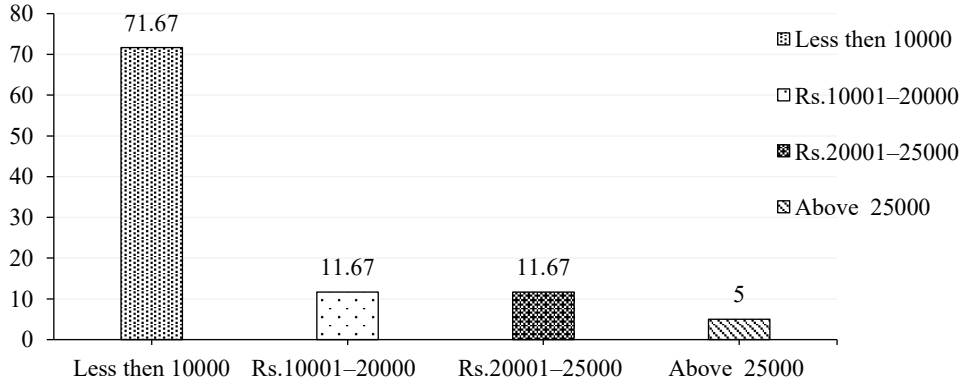

Figure 7. Bar diagram showing the frequency and percentage distribution of people regarding income.

Table 7. Frequency and percentage distribution of people regarding their income.

S.N.	Income	Frequency	Percentage%
a.	Less than 10000	43	71.67
b.	Rs.10001–20000	7	11.67
c.	Rs.20001–25000	7	11.67
d.	Above 25000	3	5.00

Table 8. Frequency and percentage distribution of people regarding the family type of the people.

S.N.	Family type	Frequency	Percentage%
a.	Nuclear family	44	73.33
b.	Joint family	9	15
c.	Extended family	7	11.67

Table 9. Frequency and percentage distribution of people regarding the number of children of the people.

S.N.	Number of children	Frequency	Percentage%
a.	0	9	15
b.	1–2 children	34	56.67
c.	3–4 children	10	16.67
d.	More than 4	7	11.67

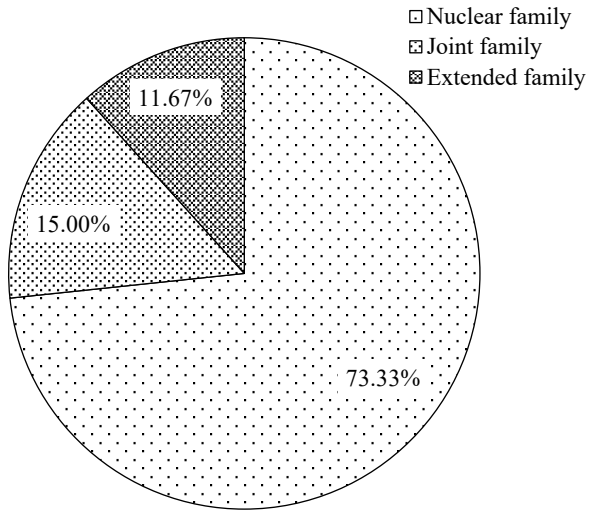

Figure 8. A pie diagram showing the frequency and percentage distribution of people regarding the type of family.

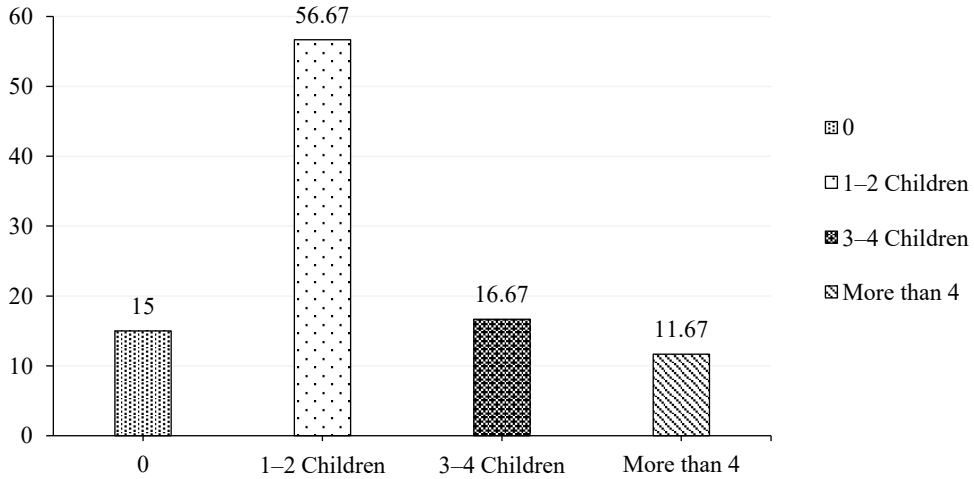

Figure 9. A bar diagram shows the frequency and percentage distribution of people regarding the number of children.

Table 10. Frequency and percentage distribution of people regarding the experience of snake bite among people.

S.N.	Experience	Frequency	Percentage%
a.	Yes	0	0
b.	No	60	100

Table 11. Frequency and percentage distribution of people regarding the source of information of the people.

S.N.	Source of information	Frequency	Percentage%
a.	Newspaper, TV, radio	14	23.33
b.	Education by health personnel	10	16.67
c.	Neighbors, relative	30	50
d.	No information	6	10.00

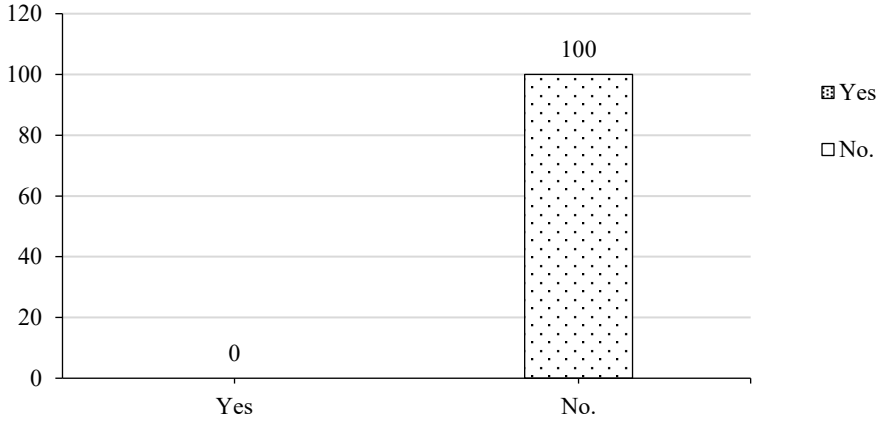

Figure 10. Bar diagram showing frequency and percentage distribution of people regarding the experience of snake bite.

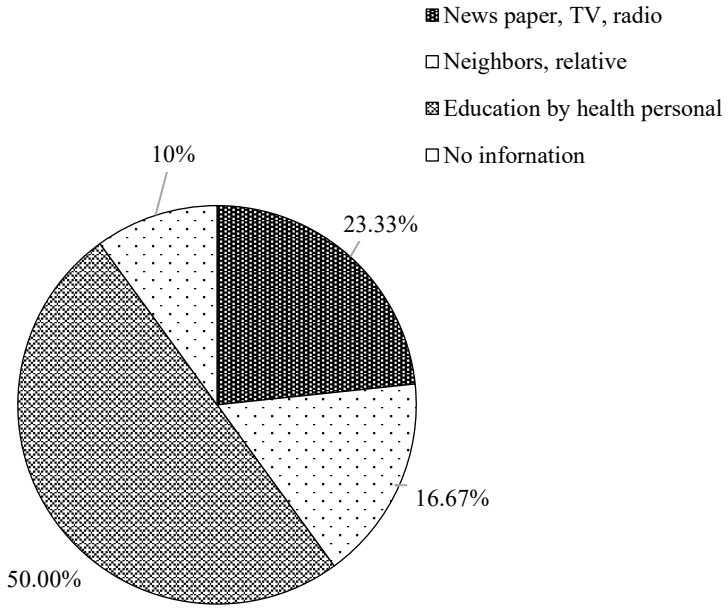

Figure 11. A pie diagram showing the frequency and percentage distribution of people regarding the source of information.

Section B: Structured Knowledge Questionnaire on First Aid Management of Snake Bite

Table 12 and Figure 12 show the frequency and percentage distribution of samples according to the pretest knowledge score of people regarding first aid for snakebites. It revealed that 0 (0%) people had good knowledge, 15 (25%) had average knowledge, and 45 (75%) had poor knowledge regarding first aid for snake bites.

Section C: Posttest Knowledge Level of People Regarding First Aid for Snake Bites

Table 13 and Figure 13 show the frequency and percentage distribution of samples according to the pretest knowledge score of people regarding first aid for snake bites. It revealed that 56 (93.3%) people had good knowledge, 4 (6.67%) people had average knowledge, and 0 (0%) had poor knowledge regarding first aid for snakebites.

Section D: Effectiveness of the Informational Booklet on Knowledge Regarding First Aid of Snake Bite

Table 14 shows that the mean pretest knowledge regarding first aid for snakebites was = 9.07 and SD 1.92 (15.11%), the posttest regarding first aid for snakebites was 25.32%, and SD 3.28 (42.19%). The mean difference was 27.08. The calculated *t*-value (85.043) was much higher than the table value (2.001) at a significance level of 0.05, which indicates that the informational booklet was highly effective in improving the knowledge regarding first aid for snakebites among participants.

Section E: Association Between Knowledge Regarding First Aid of Snake Bite and Selected Sociodemographic Variables

Table 15 shows the significant association between education and source of information regarding first aid of snake bites with their selected sociodemographic variables.

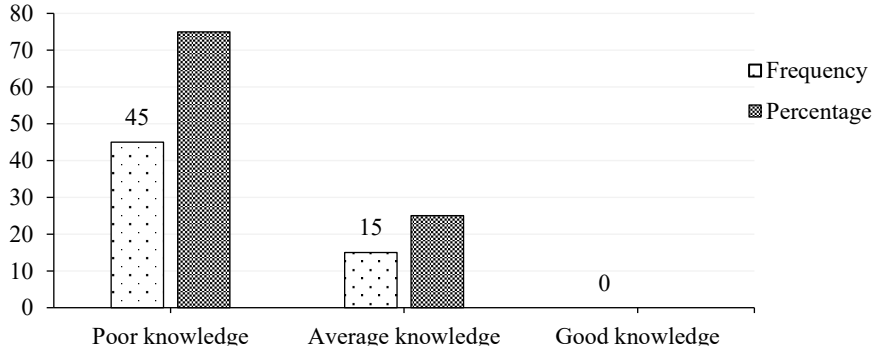

Figure 12. The graph shows the frequency and percentage distribution of the sample according to the pretest knowledge score of people.

Table 12. Frequency and percentage distribution of the sample according to the pretest knowledge score of people regarding first aid for snake bite.

Level of knowledge	Frequency	Percentage%
Poor knowledge	45	75
Average knowledge	15	25
Good knowledge	0	0

Table 13. Frequency and percentage distribution of the sample according to the posttest knowledge score of people regarding first aid for snake bite.

S.N.	Level of knowledge	Frequency	Percentage%
1	Poor knowledge	0	0
2	Average knowledge	4	6.67
3	Good knowledge	56	93.3

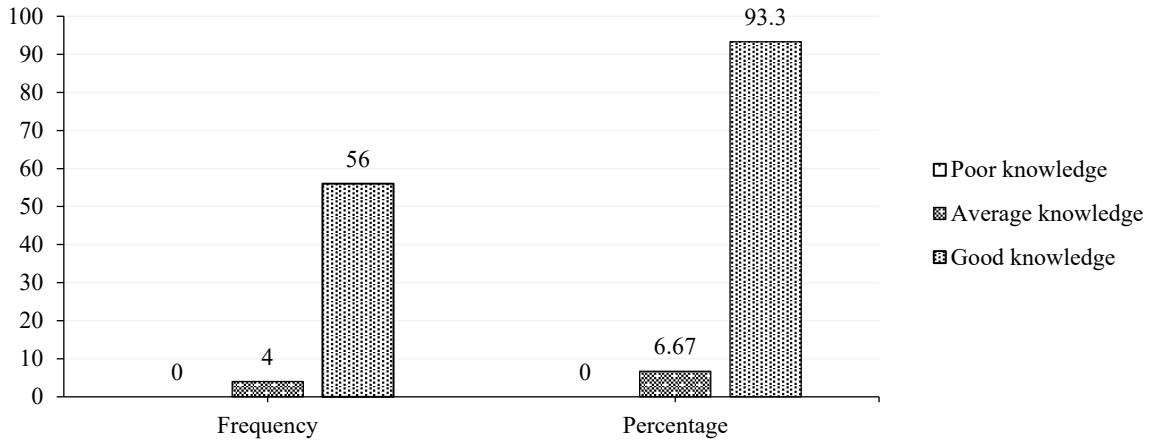

Figure 13. The graph shows the frequency and percentage distribution of the sample according to the posttest knowledge score of people regarding first aid for snake bite.

Table 14. Comparison between the mean and standard deviation of pretest and posttest knowledge regarding first aid of snake bite

S.N.	Level of knowledge	Mean	Mean %	Sd	Mean difference	Df	T-value	Table value at 0.05
1.	Pretest	9.07	15.11%	1.97	27,08	59	85.043	2.001
2.	Posttest	25.32	42.19%	2.34				

Table 15. Analyze the association of demographic variables of people regarding first aid for snake bites

Demographic variable	Frequency	Knowledge regarding first aid for a snake bite			Chi-square	p-value	DF	Table value
		Poo r	*Average*	*Good*				
Age					1.93	p>0.05		
18–25		6	2	0		NS		
26–30	60	6	4	0			6	12.59
31–35		19	4	0				
35–45		14	5	0				
Religion					0	p>0.0 5		
Hindu		45	15	0		NS		
Muslim	60	0	0	0			6	12.59
Christian		0	0	0				
Other		0	0	0				
Educational status					4.42	p<0.0 5		
No education		38	0	0		S		
Primary education	60	4	5	0			6	12.59
Secondary Education		0	13	0				
Graduation		0	0	0				
Occupation					1.23	p>0.0 5		
Agriculture		23	8	0		NS		
Self-employer		4	2	0				
Private job	60	1	0	0			8	15.51
Government job		2	0	0				
Housewife		15	5	0				

Income	60				1.80	p>0.0 5	6	12.59
Less than 10000		33	10	0		NS		
Rs.10001–20000		6	1	0				
Rs.20001–25000		4	3	0				
Above 25000		2	1	0				
Family type	60				4.90	p>0.0 5	4	9.49
Nuclear family		34	10	0		NS		
Joint family		8	1	0				
Extended family		3	4	0				
Number of children	60				1.40	p>0.05	6	12.59
0		7	2	0		NS		
1–2 Children		26	8	0				
3–4 Children		8	2	0				
More than 4		4	3	0				
Experience of snake bite	60				0	p>0.05	3	7.81
Yes		0	0	0		NS		
No		45	15	0				
Source of information	60				41.37	p<0.05	6	12.59
Newspaper, TV, radio		2	12	0		S		
Education by health personnel		8	2	0				
Neighbors, Relative		30	0	0				
No information		6	0	0				

NS, not significant; S, significant; Df, degree of freedom; χ^2,chi-square

RESULT

The obtained data were analyzed using pre-experimental tests and inferential statistics in terms of the objective and hypothesis of the study results and sociodemographic variables such as age, occupation, education, type of family, number of children, income, experience of snake bite, religion, source of information, and some demographic variables (source of information and education). The study findings revealed that the pretest mean on knowledge regarding first aid of snake bites was = 9.07, SD 1.92 (15.11%), the posttest mean regarding first aid of snake bites was 25.32, and SD 3.28 (42.19%). The mean difference was 27.08. The calculated *t*-value (85.043) was much higher than the table value (2.001) at a significance level of 0.05, which indicates that the informational booklet was highly effective in improving the knowledge regarding first aid for snakebites among participants. A previous study showed that 4.4% and 71.6% of knowledge on prevention and management of snake bite among rural areas, and study measures such as application of tourniquet, respectively, 71.6% believed in sucking the venom out of the wound. The knowledge of the study subject on snakebite and its prevention is good; however, a large number of participants have inadequate knowledge of snakebite and its prevention.

Findings of the Study

Regarding the age of the people, the majority (38.33%) were between the ages of 31 and 35. Regarding religion, the maximum number of people (100%) was Hinduism. The maximum number of people (63.33%) were not educated. Regarding occupation, the majority (51.67%) belonged to agriculture. Regarding income, most (71.57%) people earned less than 10,000. Regarding family types, the majority (73.33%) were from nuclear families. The maximum number of children (56.67%) was between 1 and 2%. Regarding the experience of first aid, the majority (100%) had no experience.

Regarding the sources of information, a maximum (50%) people received information from neighbors and relatives.

Limitations

The study was limited to people from one selected area; therefore, the findings cannot be generalized to all communities. The sample size was 60. Only knowledge was assessed, and not the actual practice of first aid in real situations. This study did not include illiterate people who could not read the booklet.

Implications

From the present study, the researcher found that the majority of people have inadequate knowledge regarding first aid for snake bites. Therefore, this study has several implications for nursing education, practice, and administration.

Practice

Nurse educators use the booklet as a simple and cost-effective educational tool during health education sessions. Improves preparedness in emergency care and enhances first aid skills at the community level.

Education

The booklet can be integrated into teaching–learning materials for community people. Health education programs must be conducted in the community to create awareness among community members.

Administration

Necessary administrative support should be provided to conduct awareness programs regarding first aid for snake bites among people. Booklet distribution can be a part of health camps and governmental health schemes.

Recommendations

Based on the findings of this study, the following recommendations were made.

A large study can be conducted to assess the effectiveness of the informational booklet on people's knowledge regarding the first aid of snake bites. A pre-experimental study was conducted. A similar study can be conducted using various instructional strategies, such as booklets and assisted teaching.

CONCLUSION

The study concluded that the informational booklet significantly improved the knowledge of rural community members regarding first aid measures for snakebites. It successfully dispelled harmful myths and increased awareness of evidence-based practice. The findings highlight that educational intervention is an effective, low-cost, and impactful tool for enhancing health literacy in vulnerable communities.

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