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Assessment of First Aid Knowledge among Adult Residents of Lahore: A Descriptive Cross-Sectional Study

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Abstract

Background: First aid is an important life-saving technique that gives immediate first aid attention until professional help arrives. Poor first aid skills of adults may result in a late response to the emergency and may also make things worse. The present study tested the level of knowledge regarding First Aid among the adult residents of Lahore, to discover the gaps in their knowledge and to provide an assistance to future first aid education programs.

Methodology: Methodology used for this study was descriptive cross-sectional that involved 138 adult people residing in Lahore, Pakistan. The participants were obtained by using the convenience sampling technique in age group 18 years and above. A structured interviewer administered questionnaire containing 15 multiple choice questions on first aid knowledge and demographic characteristics was used to collect data. The analysis of the data used was carried out by the software package IBM SPSS Statistics version 27.0. The data was summarized using descriptive statistics namely mean and standard deviations, frequencies, and percentages. Since comparing levels of knowledge on providing first aid with selected demographics was like a chi square analysis, Pearson's Chi-square Test was used for this comparison at a p value of 0.05.

Results: 138 subjects participated in the study. The majority (42.8%) were aged 26–40 years, 50.7% were female, and 58.7% were married. The overall result is that 54.3% of the participants had moderate knowledge, 23.2% had poor knowledge and 22.5% of them had good knowledge. Overall level of knowledge was 1.99 ± 0.68. No statistically significant associations were observed between first aid knowledge and age ($\chi^2 = 6.787$, $p = 0.341$), gender ($\chi^2 = 2.983$, $p = 0.225$), marital status ($\chi^2 = 0.891$, $p = 0.989$), or educational level ($\chi^2 = 16.465$, $p = 0.087$).

Conclusion: The proportions of the adult residents of Lahore who had moderate and or low levels of first aid knowledge were also quite similar with no significant relationships between knowledge and the selected receiving demographic characteristics. The results emphasize the importance of first aid education and awareness creation on the preparedness and emergency response of the public.

Keywords: First aid; First aid knowledge; Adult residents; Emergency preparedness; Cross-Sectional Study; Lahore.

Introduction

First Aid is the care given to a person who is injured or suddenly taken ill until they can receive medical attention. To save lives and minimize further harm with support to give in the critical window between the occurrence and emergency services. Where access to urgent medical treatment may be restricted, everyone with a good foundation of first aid skills could benefit teams professionally trained in first aid (İbrahimoğlu, Akarsu et al. 2024, Ygiyeva, Pivina et al. 2024). The adult in the house, workplace, street, or public place is often the first person on the scene of any accidents or medical emergencies(Mauritz, Pelinka et al. 2003). They can have the ability to respond appropriately, which can affect survival, decrease complications, and enhance health results(Keyes, Turfe et al. 2026). Therefore, first aid skills are considered as a key element in preparedness in community health (Orkin, Venugopal et al. 2021, Kendall, Laermans et al. 2025)

The importance of first aid extends beyond recognizing emergency situations; and includes having adequate knowledge of appropriate emergency response procedures (Yari, Ramba et al. 2025). People with adequate First Aid training tend to be more likely able to immediately identify an emergency and know what to do until medical help arrives (Ygiyeva, Pivina et al. 2024). Someone might know first aid in theory but not be able to do the basic first aid skills like stop bleeding, lay an unconscious person down, treat burns, or react if a person is choking(Ranjous, Al Balkhi et al. 2024). First aid awareness helps people make sound health choices when necessary and helps minimize the risk of “bad” practices taking place(Nwosu, Onwuka et al. 2022). A lack of general first aid skills on the part of the adult can make the injured person worse, through delay or mistake, or by misdirected treatment. Thus, knowledge of first aid is important to gauge community awareness and educational needs (García-Blaya, Abraldes et al. 2025, Li, Li et al. 2026)

Community-level preparedness is especially significant in Pakistan as formal assistance might not be available on a moment's notice in areas such as urban, semi-urban or densely populated areas. In this kind of settings, the initial answer is usually given by trained health-care or non-trained members of the family or neighbors or citizens. This fact makes it more important that average adults respond appropriately during emergencies. But it is not always clear what adult first aid knowledge is or isn't sufficient. First aid knowledge is a key factor in determining both needs for education and in supporting interventions to enhancing public safety and strengthening local health promoting efforts(Tannvik, Bakke et al. 2012, León-Guereño, Cid-Aldama et al. 2023).

As in all residential areas, common emergencies which pose risks to the health of children in Lahore include falls, burns, electricity shock, road traffic accident, choking and sudden illness. Nothing is known about children's readiness to respond in a first aid sense to these common hazards, nor is there well-documented evidence of the preparedness of adult residents to respond in a first aid sense in relation to these various common hazards (Alotaibi, Alrayya et al. 2025, Khan, Karan et al. 2026). When no such local evidence exists, it is not possible to get a good understanding of how aware the community is, or if there are substantial gaps in their training (Soller, Guizzardi et al. 2004). A targeted awareness program, training programmed and effective preventive approach, therefore, is required that would culminate in an evidence base for specific needs of the population (Conyne 2010, Duarte, Ramos et al. 2025).

First aid is known as one of the key capabilities required to save lives, but there is little conclusive community-based information on knowledge of first aid among the adult residents of Lahore. Past research conducted in similar contexts has tended to focus on larger groups or the population as a whole and makes it difficult to apply results to this local area (Richard, Sivo

et al. 2021). Besides, several studies have been carried out to evaluate first aid knowledge of different groups of people, but there is limited evidence about the level of first aid knowledge among adult residents of Lahore, which provides an incomplete picture of what adults know about how they could act in emergency situations (Jarral, Abbasi et al. 2026). It left a gap for a focused study to investigate the knowledge (Stecker and Lind 2025).

Previous studies have indicated the prevalence of general and differential first and aid awareness as well as lower rates of Knowledge when compared to attitudes regarding self-reported knowledge of first aid (Albadrani, Qashqari et al. 2023). Previous first aid experience, age, and education level as well as other factors such as pre-employment training and job roles could also influence first aid preparedness (Yadav, Sahoo et al. 2026). Thus, there is a need to teach community members structured training, and reassess the knowledge gained from these training sessions periodically and to organize awareness programs, as awareness campaigns may not be enough to bring about improvement in the knowledge of first aid (Fozan, Al-Ghadeer et al. 2023).

How well do adult residents of Lahore know first aid and whether this is related to any demographic factors selected? This study is designed to evaluate the Knowledge of First Aid required by the Adult Residents of Lahore and to find out the overall level of First Aid Knowledge of Adult residents among the household group in the community. The study aims to provide locally relevant information on first aid knowledge for public health planning and community education efforts, that can inform public health planning and community education efforts. The results can guide decision making about the need for additional first aid education or training to adult residents or the lack of knowledge. In conclusion, enhancing the community level knowledge of first aid can help to reduce avoidable complications, develop more rapid emergency responses, and lead to better health results(R, Shetty et al. 2018, Rao, Hegde et al. 2026).

Methodology

Research Design

This study was descriptive cross sectional in nature to evaluate level of first aid knowledge among adults of Lahore city. The descriptive cross-sectional design can be used in the present study as it allows for the evaluation of how well participants understand the topic of first aid at a specific time without control over the study variables being tested. The design also allows for the assessment of potential gaps in first aid knowledge and to explore the link between the variables of first aid knowledge with certain demographic variables.

Study Setting

This study was carried out in Lahore in the Province of Punjab, Pakistan. Lahore is a big metropolitan, diverse in terms of education, occupation and socioeconomic status and is an ideal setting to evaluate community level First Aid knowledge.

Study Population

The study was conducted on adults (18 years and above) population of Lahore city male and female. Adults are chosen because in emergencies at home, at work, on the roads and community, having the knowledge of first aid may be able to help minimize injury severity and maximize the health outcomes.

Sample size formula:

Thus, a minimum of 138 participants will be enrolled. To account for potential non-response or incomplete data, an additional 10% will be added.

The required sample size is calculated using the single population proportion formula, assuming a conservative prevalence estimate to maximize sample size and statistical power:

$$\mathbf{n = \frac{z^2 \times p(1-p)}{\varepsilon^2}}$$

Where:

- Z=1.96Z=1.96 (standard normal deviate for 95% confidence interval)
- p=0.10 p=0.10 (assumed prevalence of adequate first aid knowledge – conservative 10%, maximizing variance)
- d=0.05d=0.05 (absolute precision or margin of error)

$n = Z^2 \times p \times (1 - p) / d^2$

Where:

Z = 1.96 (for 95% CI)

p = 10% = 0.1 (assumed prevalence of adequate first aid knowledge; conservative estimate maximizes sample size)

d = 0.05 (absolute precision)

$n = 1.96^2 \times 0.1 \times (1-0.1) / 0.05^2$

n= 138

138 participants

Sampling Technique

A convenience sampling technique was used to recruit participants. Until the desired number of adults with residency would be reached, adults who reside at the community who meet the eligibility requirements and who are available during the data collection period will be invited to participate. The use of this technique is viewed as valid as the researcher was not able to confirm that he or she could approach everyone eligible to participate in the study, and there are time and resource constraints in the study.

Inclusion Criteria

Participants will be eligible if they:

- Have reached the age of majority 18 years or older.
- Lives in Lahore (Permanent residents and residents for at least 6 months).
- Have the option of participating in the study.

Giving written informed consent.

Exclusion Criteria

People will be barred from participating if they:

- Decline to participate.
- May be very ill at the time of data collection.
- Do not have the mental function to give valid answers.
- Submit incomplete questionnaires.

Research Instrument

A semi-primitive, interviewer-administered, questionnaire will be used to gather data, developed after a thorough examination of literature, and accepted international first aid guidelines.

The questionnaire will be divided into two parts:

Section A: Demographic information, such as age, gender, education, and marital status.

Section B: First aid knowledge (15 multiple choice questions that test the participant's knowledge on the principles of First Aid; bleeding; burns; cardiac pulmonary resuscitation (CPR); choking; fracture; Seizures; Electric shock; Poisoning; Infection prevention; emergency response procedures).

Validity and Reliability

The questionnaire was designed to align with the content presented in the literature available as well as internationally recognized general first aid guidance settings, such as the Help to Save Network of the American Heart Association, the European Resuscitation Council and the International Federation of Red Cross and Red Crescent Societies. A content validity review will be conducted by experts in the field of Community Health Nursing and Emergency Care to establish content validity. They will input their recommendations on the instrument's relevance, clarity, and comprehensiveness before it is final.

A pilot study will be undertaken in a representative sample (10%) of the number of people that was calculated based on the study area. Those who were part of the pilot study will not be part of the final study. The results of the pilot study will be utilized for the questionnaire to be made clearer and easier to apply. Because the knowledge items are scored dichotomously, internal consistency of the knowledge questionnaire will be assessed by The Kuder–Richardson Formula 20 (KR-20).

Data Collection Procedure

The willing family members of those who qualify for the study will be contacted in their homes or other appropriate community settings, after the IRBs of the institutions involved in the study and after permission from the community authorities, have approved the study.

The purpose, objectives, and benefits of the study, and how the research would be conducted were explained to the researcher. There will be informed consent signed on every participant. Participants will be told that participation is completely voluntary and that they can leave the study at any time, for any reason without the loss of any rights.

The questionnaire was completed in private and with respect, thereby ensuring confidentially and honesty of responses. Once a questionnaire is filled out, it will be checked for completeness and securely stored to be entered into and analyzed.

Data Analysis

The data were entered, coded, cleaned, and analyzed using the Statistical Package for the Social Sciences (SPSS), Version 27.0. The data were summarized using descriptive statistics. Frequencies and percentages will be used to describe categorical variables and means and standard deviations will be used to describe continuous variables, including the knowledge score. Association between outcome of the knowledge of first aid skills with selected demographic parameters was examined using inferential statistics. The Chi-square test will be used for the evaluation of association of categorical variables. Data will be considered statistically significant if p-value is below 0.05.

Ethical Considerations

Prior to study, ethical approval was taken from the relevant IRB. Permission to undertake the research will also be gained from appropriate local governments. All participation will be voluntary, informed written consent will be obtained from all participants before collection of data. Adequate information about the purpose, procedures, potential benefits, and minimal risk of the study were provided to the participants.

Confidentiality and anonymity will be closely respected and observed during the research. All questionnaires lacked identifying data and all the information gathered was kept safely and only shared with the research team. Participants will be able to decline to participate or withdraw from the study at any time, for any reason, without facing repercussions. Research ethics principles used in the current study were in the context of research, respected the person, beneficence, non-maleficence, justice, privacy, and confidentiality.

Results

Table 1. Socio-demographic Characteristics of the Participants (N = 138)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–25	28	20.3
	26–40	59	42.8
	41–60	31	22.5
	Above 60	20	14.5
Gender	Male	68	49.3
	Female	70	50.7
Marital Status	Single	30	21.7
	Married	81	58.7
	Divorced	14	10.1
	Widowed	13	9.4
Educational Level	Uneducated	23	16.7
	Primary School	6	4.3
	High School	12	8.7
	Diploma	9	6.5
	Bachelor's Degree	54	39.1
	Master's Degree	34	24.6

The socio-demographic characteristics of the participants are presented in **Table 1**. The largest proportion of participants belonged to the **26–40 years** age group (**42.8%),** followed by those aged **41–60 years (22.5%), 18–25 years (20.3%),** and **above 60 years (14.5%**). The gender distribution was nearly equal, with **70 females (50.7%)** and **68 males (49.3%).** Regarding marital status, more than half of the participants were **married (58.7%),** while **21.7%** were single, **10.1%** were divorced, and **9.4%** were widowed. In terms of educational level, the highest proportion had a **Bachelor's degree (39.1%),** followed by **Master's degree (24.6%),** while **16.7%** had no formal education.

Table 2. Overall, First Aid Knowledge Level among Adult Residents of Lahore (N = 138)

Knowledge Level	Frequency (n)	Percentage (%)
Poor knowledge	32	23.2
Moderate knowledge	75	54.3
Good knowledge	31	22.5
Total	**138**	**100.0**

The overall first aid knowledge level of the participants is shown in **Table 2**. More than half of the participants demonstrated a **moderate level of first aid knowledge (54.3%).** Poor knowledge was observed among **32 participants (23.2%),** while **31 participants (22.5%)** demonstrated good knowledge. These findings indicate that although most participants had a moderate level of knowledge, only about one-fifth had good first aid knowledge.

Table 3. Descriptive Statistics of Overall First Aid Knowledge Level

Variable	Mean ± SD	Minimum	Maximum
Overall Knowledge Level	**1.99 ± 0.68**	1	3

As presented in **Table 3**, the mean overall knowledge level was **1.99 ± 0.68**, with a minimum score of **1** and a maximum score of **3**. Since the knowledge level was categorized as poor, moderate, and good, the mean value suggests that the average knowledge level of participants was close to the **moderate knowledge** category.

Table 4. Association Between Overall First Aid Knowledge Level and Selected Demographic Variables (N = 138)

Demographic Variable	χ^2	df	p-value	Interpretation
Age	6.787	6	0.341	Not statistically significant
Gender	2.983	2	0.225	Not statistically significant
Marital Status	0.891	6	0.989	Not statistically significant
Educational Level	16.465	10	0.087	Not statistically significant

The association between overall first aid knowledge level and selected demographic variables is presented in **Table 4**. Pearson's Chi-square test showed no statistically significant association between first aid knowledge level and age ($\chi^2 = 6.787$, **df = 6, p = 0.341**), gender ($\chi^2 = 2.983$, **df = 2, p = 0.225**), or marital status ($\chi^2 = 0.891$, **df = 6, p = 0.989**). Educational level also showed no statistically significant association with first aid knowledge ($\chi^2 = 16.465$, **df = 10, p = 0.087**), although the p-value suggested a trend toward association. Overall, none of the selected socio-demographic variables were significantly associated with participants' first aid knowledge level at the 0.05 significance level.

Discussion

In the present study to assess the knowledge of first aid among the adults residing in Lahore, it was concluded that majority (54.3%) had moderate knowledge of first aid, 23.2% had poor knowledge and 22.5% had good knowledge of the first aid. The results indicate that although quite a few adults have a general knowledge of first aid ideas, detailed knowledge is still not complete. In recent studies, it was noted that there was moderate first aid awareness among the general population in Saudi Arabia with considerable gaps in both the methods and approaches of first aid activities and the overall context of emergency management, highlighting the

importance of continuing to educate the population about first aid (Amoudi, AlAithan et al. 2025).

The findings of this study, that moderate levels of first aid knowledge dominate, align with evidence which suggests that people of the general public may be familiar with first aid principles but not extensive knowledge of evidence-based interventions in emergencies (Amoudi, AlAithan et al. 2025). A national survey has also been carried out a few years ago across Pakistan, which similarly found poor levels of public first aid knowledge, and a need for formal first aid training and for a broadened community training programmed (Khan, Karan et al. 2026).

The present study found no statistically significant association between first aid knowledge and age ($\chi^2 = 6.787$, $p = 0.341$), gender ($\chi^2 = 2.983$, $p = 0.225$), marital status ($\chi^2 = 0.891$, $p = 0.989$), or educational level ($\chi^2 = 16.465$, $p = 0.087$). These results suggest that the first aid knowledge of the various groups of demographics studied was uniform. Similar results were noted for studies on which demographic factors alone did not consistently predict levels of first aid knowledge, indicating that it is possible that first aid knowledge is more strongly shaped by structured first aid educational events than demographic characteristics (Khan, Raza et al. 2022).

There was no significant correlation between education level and the knowledge of first aid, but there was a tendency ($p = 0.087$). This may suggest that there is an association between educational level and first aid knowledge, although it was not strong enough to achieve a statistical significance. Also, similar findings were seen among community people and educational professionals, with an increase in education resulting in better knowledge of first aid; however, higher education did not entirely remove first aid knowledge gaps (Ygiyeva, Pivina et al. 2024).

Training on First Aid was found to be lacking equally across demographic groups as there is no difference between the age and gender in statistical terms. Thus, first aid educational interventions should be geared towards the adult population and not narrow on any age or gender. In line with previous studies with similar recommendations, this study suggests public first aid training for all ages, as a viable strategy to enhance emergency preparedness and the number of able-bodied humanitarian responders in the event of a medical emergency (Patel, H.N et al. 2021).

From a public health point of view, it is that only 22.5% of the participants had a good first-aid knowledge. If members of the community can provide appropriate and timely first aid, this can help limit the severity of injury, reduce complications, and potentially save lives that could otherwise have been avoided, before professional medical help arrives. The moderate level of knowledge revealed in the present study, thus, emphasizes the need for regular first aid Awareness Campaigns and Training program that is easily accessible. Recent studies have shown that the provision of structured first aid tend to increase the public's understanding and that there is a community-level benefit from better preparedness such education brings (Kano, Siegel et al. 2005).

The authors have several strengths with the present study. It presents evidence on the first aid knowledge by questioning the adult residents of Lahore in a structured manner and statistically analyzing it. Moreover, it brings evidence of local origin to an environment where scientific studies are lacking. However, it is important to recognize that there are some restrictions. First, the cross-sectional design does not allow to draw causal conclusions about the relationship between age groups and knowledge of first aid. Secondly, the findings may be limited to the generalizability on wider population of Lahore due to Convenience sampling. Third, first aid knowledge was measured but not first aid skills or previous first aid training, which can impact emergency preparedness. Larger, random samples and assessment of the efficacy of structured

first aid education programs to increase public knowledge should be considered in future studies.

At a general level, the results indicate that the knowledge of the first aid among the adults who live in the city of Lahore is mostly moderate and few of them show good knowledge about first aid. In addition, Demographic variables were not found to have a significant relationship between first aid knowledge. The results highlight the need for conducting wider and broader educational campaigns for general awareness and emergency preparedness among adults in Lahore.

Conclusion

In this study the general impression was provided that adult population of Lahore had moderate knowledge of first Aid with no more than 10 percent having good knowledge. The age, gender, marital status, and educational level were not associated with first aid knowledge, except that age showed a marginally significant association. The results show that there is some significant lack of information among adults which gives a clear indication of the need for first aid education and awareness campaign. Regular training and health education will help enhance public knowledge and awareness, better prepare the public for disaster, encourage immediate first aid measures in the event of an accident, and assist in achieving good health improvements in the community.

Future Recommendations

This study suggests that first aid education and awareness programs should be conducted in the community, to help increase the knowledge of the adult residents of Lahore regarding first aid. There should be joint efforts between public health bodies, educational establishments, and other emergency services like Rescue 1122 to offer regular First Aid training and raising the awareness of the public via schools, workplaces, community centers and mass media. Common emergency situations and evidence-based first aid practices should be a target for these. Further, studies with larger, more representative samples, employing probability sampling methods and assessment of first aid knowledge and first aid skills must also be conducted to yield a better picture of community preparedness; or, preparedness levels should be evaluated within a homogenous demographic for more accurate data on community attitudes and behaviors related to first aid preparation and treatment.

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