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KNOWLEDGE AND AWARENESS LEVEL TOWARD INITIAL MANAGEMENT OF POISONING AMONG SAUDI POPULATION

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Abstract:

Background: According to WHO, Poison is described as a substance or object, whether natural or artificial, that has the potential to be harmful to living organisms. Accidental poisoning is a major international issue. It is expected to remain one of the most common medical emergencies that doctors and medical facilities deal with at any moment. Consequently, this resulted in greater morbidity and mortality rates among almost a million people per year. Therefore, there is limited study in the literature regarding the knowledge and awareness of poisoning management in the Kingdom of Saudi Arabia.

Objectives: This study aims to assess the knowledge and awareness level of poisoning management among Saudi population.

Method: This is a cross-sectional study. The inclusion criteria include Citizens who live in Saudi Arabia and Adult males and females older than 18 who can complete the questionnaire during the period of 2023-2024. The exclusion criteria are adult males and females outside Saudi Arabia and Anyone who does not complete the questionnaire. With a 95% confidence level, an estimated sample size of 385 was calculated using the Qualtrics calculator.

Results: The study included 416 participants, 54.8% of them were males. 48.6% of the participants possess a good knowledge level, 41.8% exhibits a moderate knowledge level, and 9.6% of the sample exhibit a weak knowledge level. Participants' knowledge scores were significantly associated with both age and gender.

Conclusion: In conclusion, Saudi general population exhibited a poor knowledge towards initial management of poisoning. By addressing education, access to information, cultural factors, and targeted interventions, it is possible to improve the knowledge and awareness level and ultimately reduce the

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burden of poisoning in Saudi Arabia.

Keywords: Poisoning, Knowledge and awareness, Saudi Arabia, Population

Introduction:

According to WHO, poison is described as a substance or object, whether natural or artificial, that has the potential to be harmful to living organisms [1]. Poisons are toxic substances that can be consumed, injected, inhaled, or absorbed. The clinical manifestation will differ depending on whether the exposure is acute or chronic [2]. Accidental poisoning is a major international issue. It is expected to remain one of the most common medical emergencies that doctors and medical facilities deal with at any moment [3]. Furthermore, it is the cause of high rates of admission to emergency rooms worldwide [4]. Poisoning is getting more and more over time because of social development and lifestyle changes [5]. Consequently, this resulted in greater morbidity and mortality rates among almost a million people per year [4]. Provided that unintentional poisoning is thought to have killed 350,000 individuals globally [6]. Also, in developed countries the fatality from toxins is 1-2 percent, while in developing countries is 15-30 percent [7]. We believe the vast healthcare system in the Kingdom of Saudi Arabia underserves the profession of medical and clinical toxicology and lacks well-established poison control facilities [8].

Nevertheless, the lack of accurate and comprehensive reports on the occurrence of poisoning cases hinders the determination of the precise prevalence of poisoning. Acute poisoning encompasses several significant categories, such as drug overdoses, chemical exposures, and pesticide intoxication. Therefore, effective administration and application of initial medical assistance and first aid are crucial in saving lives in such circumstances prior to the intervention of healthcare experts [9-11].

Medical students and health care personnels receiving instruction at hospitals should acquire the skills necessary to manage emergencies in clinical departments in the absence of healthcare providers. Therefore, it is crucial to obtain comprehensive knowledge early on regarding the initial management of urgent patients and first aid [12]. There is a shortage of research in Saudi Arabia that evaluates the knowledge and awareness of public in addressing emergency cases and initial management of acute poisoning. Therefore, the purpose of this study is to analyze the knowledge and awareness level toward initial management of poisoning among Saudi population.

Objectives:

This study aims to assess the knowledge and awareness level of poisoning management among the Saudi population .

Materials and Methods :

Study design: This study is a cross-sectional questionnaire survey, based on a structured questionnaire that authors will develop.

Study setting: Participants, recruitment, and sampling procedure: This research consists of the Saudi population above 18 years old in all regions of Saudi Arabia. The participants will be recruited during 2023-2024.

Inclusion and Exclusion Criteria : The inclusion criteria include Citizens who live in Saudi Arabia

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and Adult males and females 18 or older who can complete the questionnaire. The exclusion criteria are adult males and females outside Saudi Arabia and Anyone who does not complete the questionnaire.

Sample size: With a 95% confidence level, the sample size was estimated using the Qualtrics calculator; the minimum sample size was 385.

Method for data collection and instrument (Data collection Technique and tools): Self- made questionnaire which will be disrupted in social media to get the answers from population.

Pilot test: The questionnaire was disrupted on 20 individuals and asked to fill it. This was done to test the simplicity of the questionnaire and the feasibility of the study. Data of the pilot study was excluded from the final data of the study.

Scoring system: Mentioned in the questionnaire itself.

Analyzes and entry method: The questionnaire data will be inputted, stored, and coded using Microsoft Office Excel (2019). The Statistical Package for Social Science Software (SPSS), version 26 for Windows, will be used for all statistical analyses. Descriptive statistics will be used to describe the qualitative variables in frequencies and percentages. Pearson's Chi-square test will be used to determine the relationship between the category variables. A P value of less than 0.05 will be considered statistically significant for all analyses.

Results:

Table (1) showed that according to age, the largest proportion of respondents falls within the 20-30 age bracket, accounting for 48.8% of the total. This is followed by individuals aged 31-40 (12.7%) and those aged 41-50 (15.6%). The smallest proportions are seen in the age groups of more than 60 (4.8%) and less than 20 (10.8%). In terms of gender, the data shows that 54.8% of the respondents are male, while 45.2% are female. Moving on to location, the majority of respondents are from the East (49.3%) and the West (35.6%). Smaller percentages are located in the South (8.2%), Middle (4.3%), and North (2.6%). Regarding education level, the data indicates that the highest proportion of respondents have a Bachelor's degree (51.0%), followed by secondary education (26.9%), diploma (13.0%), postgraduate (6.5%), and middle-level education (2.6%). Finally, the occupation breakdown reveals that the largest group of respondents are government employees (37.7%), followed by students (36.8%), individuals who stated they are doing nothing (12.9%), retired individuals (7.2%), private sector employees (2.4%), housewives (1.7%), and those involved in free business (1.2%).

Table (1): Sociodemographic characteristics of participants (n=416)

Parameter		No.	%
Age	less than 20	45	10.8
	20_30	203	48.8
	31_40	53	12.7
	41_50	65	15.6
	51_60	30	7.2
	more than 60	20	4.8

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Gender	Male	228	54.8
	Female	188	45.2
Location	East	205	49.3
	Middle	18	4.3
	North	11	2.6
	South	34	8.2
	West	148	35.6
Education Level	secondary	112	26.9
	middle	11	2.6
	Bachelor's	212	51.0
	diploma	54	13.0
	Postgraduate	27	6.5
Occupation	free business	5	1.2
	housewife	7	1.7
	student	153	36.8
	Retired	30	7.2
	government employee	157	37.7
	private sector employee	10	2.4
	nothing	54	12.9

Table (2) showed that when dealing with a snake bite, it is important to take the correct steps to minimize the impact of the venom. According to the data, a majority of respondents (61.1%) suggested calling an ambulance, calming the victim, washing the wound with soap and water, and not moving the injured person except when necessary. Knowing the shape and color of the snake was deemed useful by a significant majority (85.3%) of respondents. In the case of a scorpion sting, calling an ambulance was the most popular response (82.7%). Placing ice directly on the injury site was also mentioned by a substantial number of respondents (62.3%). Understanding the color and shape of the scorpion was considered useful by a large majority (78.4%) of participants. For spider bites, washing the affected area with soap and water and applying ice to reduce swelling was the most commonly chosen response (44.5%). When it comes to dealing with food poisoning, placing the patient in a lying position and preventing dehydration by providing small amounts of water, especially in cases of vomiting or diarrhea, was the preferred course of action by (61.3%) of participants. The data also revealed varying opinions on offering food and drinks to a patient with food poisoning. While a majority opted for bread or banana (49.3%) as a food option, there were conflicting responses regarding the provision of soft drinks, with 59.9% of respondents saying no.

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Table (2): Knowledge of participants of initial management of poisoning (n=416).

Parameter		No.	%
What are the correct steps to deal with the situation:	I try to make a cut with a sharp object at the level of the bite and try to suck out the poison to get it out. I put ice directly on the bite to relieve the pain.	108	26.0
	Call an ambulance. I calm the sting victim. I wash the wound with soap and water. I do not move the injured person except when necessary and place him in a comfortable position to limit the spread of the poison in the body. I get rid of anything tight around the affected part of the body, such as rings and watches.	254	61.1
	I don't know	54	13.0
Is it useful to know the shape and color of the snake?	Yes	355	85.3
	No	18	4.3
	I don't know	43	10.3
Is it useful to tie a piece of cloth around the sting site to limit the spread of the poison throughout the body?	Yes	333	80.0
	No	34	8.2
	I don't know	49	11.8
What is the first course of action when exposed to a scorpion sting?	Taking tranquilizers	9	2.2
	Call an ambulance	344	82.7
	Catch a scorpion	33	7.9
	I don't know	30	7.2
Is it useful to know the color and shape of the scorpion?	Yes	326	78.4
	no	36	8.7
	I don't know	54	13.0
What are the correct steps to deal with a scorpion sting?	Call an ambulance and place pieces of ice directly on the injury site	259	62.3
	Try to extract the poison, and place the affected part in cold water	90	21.6
	I don't know	67	16.1
Is it useful to raise the affected part up?	Yes	89	21.4
	no	120	28.8
	I don't know	207	49.8
Is it useful to identify the type of spider or	Yes	319	76.7
	no	29	7.0
	I don't know	68	16.3

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photograph it to identify its type later?			
What are some correct steps to deal with a spider bite?	Wash the affected area with soap and water, and apply ice to reduce swelling	185	44.5
	Try to extract the poison and cauterize the sting site	65	15.6
	I don't know	166	39.9
What are the correct steps to deal with food poisoning:	I place the patient in a lying position. I prevent the patient from becoming dehydrated by giving him a little water, especially if there is vomiting or diarrhea.	255	61.3
	I place the patient in a sitting position, refrain from giving the patient water or fluids in order to prevent further diarrhea or vomiting, and offer the patient coffee to help him overcome the feeling of nausea.	61	14.7
	I don't know	100	24.0
If the patient wants to eat, I offer him:	Bread or banana	205	49.3
	Food containing spices	18	4.3
	I don't know	193	46.4
Is it useful to give the patient soft drinks:	Yes	37	8.9
	no	249	59.9
	I don't know	130	31.3

Figure (1) showed knowledge score level of initial management of poisoning and indicated that a majority of individuals, constituting 48.6% of the sample, possess a good knowledge level. Furthermore, the figure reveals that 41.8% of the population exhibits a moderate knowledge level. Conversely, a smaller percentage of individuals, comprising 9.6% of the sample, exhibit a weak knowledge level.

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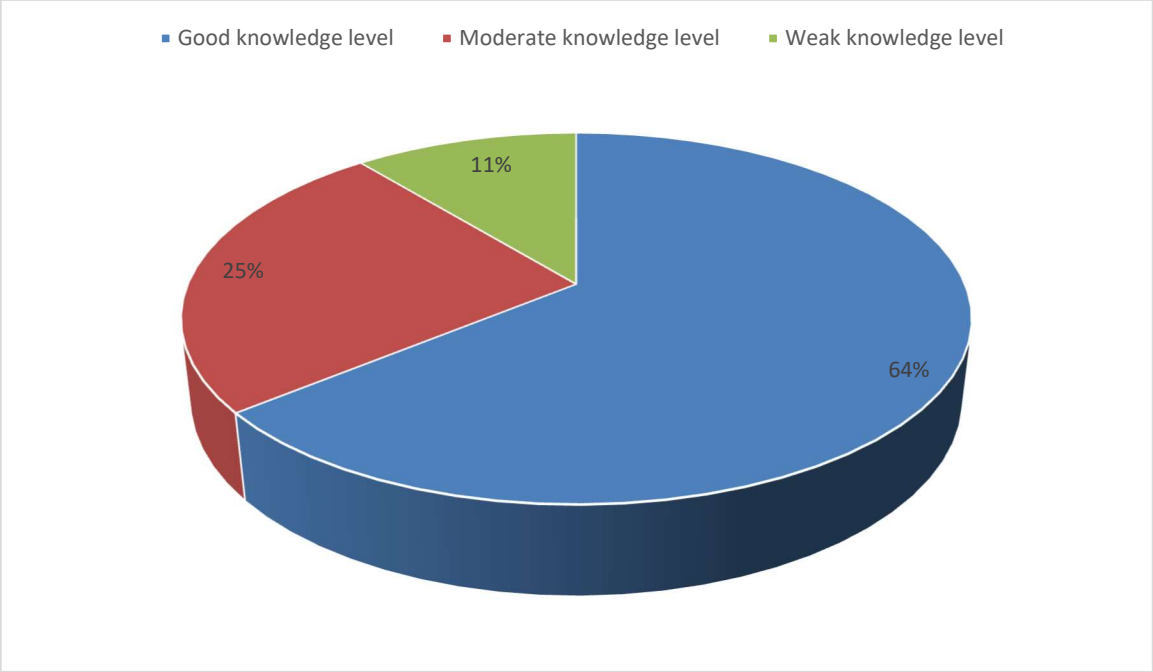

Figure 1 Knowledge score level of initial management of poisoning

Table (3) showed that with age, the data illustrates that individuals aged 20-30 constitute the largest group, comprising 48.8% of the total sample. This group also demonstrates the highest proportion of individuals with moderate knowledge scores, at 26.0%. In contrast, individuals aged over 60 represent the smallest group, comprising only 4.8% of the total sample, with a relatively balanced distribution of knowledge scores. Age showed a significant association with knowledge, with p-value= 0.002. Regarding gender, the table indicates that males constitute a slightly higher proportion of the sample at 54.8% compared to females at 45.2%. The distribution of knowledge scores between the two genders is relatively similar, with a slightly higher percentage of males demonstrating good knowledge. However gender also showed a significant association with knowledge, with p-value= 0.020. Moving on to location, individuals from the East region make up the largest proportion of the sample at 49.3%, with the majority exhibiting moderate knowledge scores. The differences in knowledge scores across regions are not substantial, with the Middle and North regions representing the smallest proportions of the sample. Education level is an important factor in the analysis, with individuals holding a bachelor's degree comprising the largest group at 51.0%. This group also demonstrates the highest proportion of individuals with moderate knowledge scores at 24.3%. The differences in knowledge scores across education levels are notable, with individuals holding a diploma or postgraduate degree exhibiting relatively lower percentages of good knowledge scores. Lastly, the table examines the association between occupation and knowledge scores. Students represent the largest occupational group at 36.8%, with a relatively balanced distribution of knowledge scores. However, location, education level, and occupation showed no significant association with knowledge.

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Table (3): Association between sociodemographic characteristics and knowledge score (n=416).

Parameter		Knowledge score			Total (N=416)	P value
		Good knowledge	Moderate knowledge	Weak knowledge		
Age	less than 20	21	22	2	45	**0.002**
		5.0%	5.3%	0.5%	10.8%	
	20_30	108	81	14	203	
		26.0%	19.5%	3.4%	48.8%	
	31_40	32	17	4	53	
		7.7%	4.1%	1.0%	12.7%	
	41_50	24	31	10	65	
		5.8%	7.5%	2.4%	15.6%	
	51_60	8	18	4	30	
		1.9%	4.3%	1.0%	7.2%	
	more than 60	9	5	6	20	
		2.2%	1.2%	1.4%	4.8%	
Gender	Male	103	95	30	228	**0.020**
		24.8%	22.8%	7.2%	54.8%	
	Female	99	79	10	188	
		23.8%	19.0%	2.4%	45.2%	
Location	East	94	88	23	205	**0.098**
		22.6%	21.2%	5.5%	49.3%	
	Middle	13	4	1	18	
		3.1%	1.0%	0.2%	4.3%	
	North	3	7	1	11	
		0.7%	1.7%	0.2%	2.6%	
	South	23	8	3	34	
		5.5%	1.9%	0.7%	8.2%	
	West	69	67	12	148	
		16.6%	16.1%	2.9%	35.6%	
Education Level	Middle	3	8	0	11	**0.167**
		0.7%	1.9%	0.0%	2.6%	
	Secondary	61	41	10	112	
		14.7%	9.9%	2.4%	26.9%	
	Bachelor	101	92	19	212	
		24.3%	22.1%	4.6%	51.0%	
	Diploma	21	26	7	54	

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		5.0%	6.3%	1.7%	13.0%	
	Postgraduate	16	7	4	27	
		3.8%	1.7%	1.0%	6.5%	
Occupation	Free business	2	3	0	5	**0.233**
		0.5%	0.7%	0.0%	1.2%	
	Housewife	3	2	2	7	
		0.7%	0.5%	0.5%	1.7%	
	Student	80	66	7	153	
		19.2%	15.9%	1.7%	36.8%	
	Retired	10	17	3	30	
		2.4%	4.1%	0.7%	7.2%	
	Government employee	76	60	21	157	
		18.3%	14.4%	5.0%	37.7%	
	Private sector employee	3	5	2	10	
		0.7%	1.2%	0.5%	2.4%	
	Nothing	28	21	5	54	
		6.7%	5.0%	1.2%	12.9%	

Discussion:

Poisoning is a serious public health issue that can have severe consequences if not managed properly. It is crucial for individuals to have the knowledge and awareness to be able to recognize and respond to poisoning incidents effectively [3]. In Saudi Arabia, there is a need to assess the level of knowledge and awareness among the population regarding the initial management of poisoning. This includes understanding the common causes of poisoning, the signs and symptoms of poisoning, and the appropriate first aid measures to be taken in the event of a poisoning incident. One of the key factors that can influence the knowledge and awareness level toward the initial management of poisoning is education. It is important for educational institutions, healthcare providers, and public health authorities to provide comprehensive and accurate information on poisoning and its management. Additionally, access to information and resources plays a crucial role in increasing knowledge and awareness. It is important for individuals to have access to reliable sources of information about poisoning, such as websites, hotlines, and educational materials. Healthcare providers also play a vital role in educating their patients about poisoning and the necessary steps to take in case of an emergency.

Cultural and social factors can also influence the knowledge and awareness level toward the initial management of poisoning. It is important to take into consideration cultural beliefs and practices that may impact the way individuals perceive and respond to poisoning incidents. This can include seeking traditional remedies or avoiding seeking medical help due to stigma or fear of legal repercussions [6-9].

Our study showed that 48.6% and 41.8% of participants had high and moderate knowledge, respectively, which is considered to be adequate. Another study in Riyadh City, KSA showed that 77.3%

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of students had a satisfactory level of understanding, whereas 22.7% of topics exhibited an inadequate level of knowledge [4]. This was in the same respect with another study conducted among students from different universities in Istanbul in which the medical students had adequate awareness regarding the symptoms, types and first aid management procedures for acute poisoning [13]. Moreover, another study in at Imam Abdulrahman bin Faisal University, KSA showed that there was a slightly moderate overall degree of knowledge for the initial management of acute toxicity [14].

In order to improve the knowledge and awareness level toward the initial management of poisoning among the Saudi population, it is important to implement targeted interventions. This can include the development of educational materials in multiple languages, the training of healthcare providers to effectively communicate information about poisoning, and the collaboration with community leaders to disseminate information to the public.

Furthermore, research and data collection are essential to understanding the current knowledge and awareness level toward the initial management of poisoning in Saudi Arabia. By conducting surveys and studies, public health authorities can identify gaps in knowledge and awareness and develop evidence-based interventions to address these gaps.

Limitations:

This study is a valuable contribution to the field. However, it is important to acknowledge certain limitations that may affect the generalizability and reliability of the findings. Firstly, the sample size and demographic representation of the participants may not fully capture the diversity of the Saudi population, thus limiting the external validity of the study. Additionally, the use of self-reported data may introduce response bias and inaccuracies in the assessment of knowledge and awareness levels. Furthermore, the cross-sectional design of the study may not allow for causal inferences or long-term trends to be established. These limitations should be taken into consideration when interpreting the results and implications of the study.

Conclusion:

In conclusion, Saudi general population exhibited a poor knowledge towards initial management of poisoning. By addressing education, access to information, cultural factors, and targeted interventions, it is possible to improve the knowledge and awareness level and ultimately reduce the burden of poisoning in Saudi Arabia.

Acknowledgement:
We thank the participants who all contributed samples to the study.

Ethical approval

Ethical approval was obtained from the research ethics committee of the university of king Abdulaziz with Application number: [146-24]. An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

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Conflict of interests
The authors declare that there are no conflicts of interest.

Informed consent:
Written informed consent was obtained from all individual participants included in the study.

Data and materials availability

All data associated with this study are present in the paper.

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