

## Assessment of Mothers' Knowledge, Practices, and Attitudes towards Animal Bites for their Children

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### Abstract

**Background:** Animal bites are common problems in children, with the majority of bites come from dogs and cats. One of the most important diseases transmitted by animal bites is rabies. **Aim:** the present study aimed to assess mothers' knowledge, attitudes and practices regarding animal bites for their children. **Design** A descriptive research design **setting:** Emergency Department of Al-Santa Central Hospital which is affiliated to Ministry of Health and Population. **Subjects:** A convenience sampling of all (300) mothers of children complaining of animal bites was recruited in the current study. **Tools:** Three tools were used, Tool I; Mothers' knowledge regarding animal bites, Tool II; mothers' reported practices regarding animal bites and Tool III; mothers' attitudes toward animal bites. **Results:** the majority of mothers (92,7%) had low level of total knowledge about animal bites. More than three quarters of the mothers (76,7%) their total practice was unsatisfactory and 77% of them had negative attitude regarding animal bites. **Conclusion:** mothers had low level of knowledge, unsatisfactory practice and negative attitude toward animal bites. **Recommendation:** Educational program should be conducted to mothers at Emergency department to enhance their knowledge, attitude and practice regarding prevention and caring of children with animal bites.

**Keywords:** Attitudes, Animal bites, Children, Mothers' Knowledge & Practice.

## Introduction

Animal bites are common problems in children. Getting bitten by an animal can happen to anyone. Child may be hiking or camping and come across a wild animal that bites him or her to protect itself. Many types of animals can inflict bites on children. Most animal bites are from the family pets such as dogs and cats, other animals such as donkeys, rats, raccoons, ferrets, and squirrels can also bite **Cohn I (2018)**. Any animal has the potential to bite. It can act unpredictably and bites are not always provoked but an animal is more likely to bite if it's been disturbed, feels threatened and gets overexcited **Essing J. (2019)**.

The injuries sustained from an animal bite are dependent upon the characteristics of the biting animal, the method and ferocity of attack, and the anatomical location of the bite. Injuries can range from minor abrasions to severe injuries as amputation of limbs. Death usually occurs when a child sustains trauma to the head and neck **Joseph E (2019)**.

Animal bites serve as an important route of transmission for a number of diseases, most importantly rabies, which still remains endemic in large parts of the world. Infection with rabies virus is one of the oldest public diseases. It is a viral disease transmitted by the bite of an infected animal producing an acute illness with rapidly progressive central manifestations leading to death in an unprotected child. The main mode of transmission to humans is through the saliva of an infected dog. Once the virus has entered the body infection is established **Khalaf F (2019)**.

Nurses play an important role regarding increasing awareness about animal bites and rabies and its preventive measures for

mothers and their children. This can help in the prevention and protection of children through health education to the mothers about rabies. They are concerned with early detection of rabies and early treatment through washing of the wound under running water and soap, giving the vaccination and isolating of the child in a dark room and providing a quiet environment. They also have a crucial role in the rehabilitation and psychological support for children who experience anxiety, fear and stress **(WHO 2017)**.

Mothers play an important role regarding increasing awareness about rabies and preventive measures for their children, by providing first aid and home care for the bitten children. They are the major coordinators of care and the link to the health care system for their children **Biaho A. (2020)**.

Mothers may have inadequate knowledge regarding prevention and management of animal bites. Insufficient knowledge about animal bites complications, rabies dangers, wound management and particularly post-exposure prophylaxis, was the main cause of rabies deaths among children. Mothers' education particularly in poor and rural communities would prevent more complications of animal bites **Edukugho A. (2018)**.

## Significance of the study

Animal bite injuries are very complex, both physically and psychologically, and in some cases it becomes fatal. In Egypt, people experience many animal bites annually with more than 200,000 animals, bites recorded each year mostly from dogs. Globally, rabies deaths are rarely reported. Children between the ages of 5-14 years are frequent

victims represent 40% of people bitten by suspected rabid animals **WHO (2018)**.

### **Aim of the study**

The study was conducted to assess mothers' knowledge, practices, and attitudes towards animal bites for their children.

### **Subjects and Method**

A descriptive research design was used in the current study. The study was conducted at Emergency Department of Al-Santa Central Hospital which is affiliated to Ministry of Health and Population.

**Subjects:** All mothers who admitted with their children (300 children) at the previously mentioned setting within 6 months were recruited in the current study. The study involved mothers of children whose age ranged between 4–14 years because it is the most common age that exposed to animal bites.

### **Tools of data collection**

Three tools were used in the current study to collect the required data. The study tools were developed by the researcher as follow:

**Tool (I): Mothers' Knowledge Regarding Animal Bites Questionnaire:** A structured interview schedule was developed by the researcher. It was consisted of three parts:

**Part (1): Socio-demographic characteristics of the mothers:** such as: mothers' age, educational level, occupation, family size, animals' ownership, and previous exposure of any family members to animal bite.

**Part (2): Bio-Socio-demographic characteristics of the children:** such as age, sex, birth order, educational level, previous exposure to animal bites, animal type & sites of bite.

**Part (3): Mothers' knowledge regarding animal bites:**

It was developed by the researcher after reviewing of the literatures (**Durr S. 2017&Nancy C. 2018**).

It included data related to animal bites definition, causes, types, signs and symptoms, dangerous bites' sites, complications, prevention, wound care after bites, risk for rabies, ways of rabies transmission, and vaccination.

### **Tool (II): Mothers' Reported Practice Regarding Wound Care of Animal Bites:**

This tool was developed by the researcher based on reviewing recent related literatures. (**Nancy C. 2018 & Mindekem R. 2017**)

It included data related to mothers' practice regarding immediate wound care which contained (5 items), including: washing of wound with soap& water, remove of dirties from wound, clean the wound with iodine, use any antiseptic solution at home, and put antibiotic cream . Control of bleeding of the wound (7steps), that include: compress on wound to stop bleeding, don't move the injured part and elevate injured part above heart level, call for help, covering the wound or going to hospital. Mothers' reported practice regarding vaccination schedule of their child included (4items),such as adhere to anti-rabies vaccine, transfer child to take immunoglobulin vaccine as needed , take tetanus vaccine as needed and take prescribed antibiotic.

### **Tool (III): Mothers' Attitudes Regarding Animal Bites.**

It was developed by the researcher after reviewing of recent literatures (**Hagos WG2020**) and was used to assess mothers' attitudes toward animal bites. A three-point Likert scale were used. Mothers agree

response was scored (2), uncertain (1) and disagree (0).

The attitude scale included 17 items such as: I will allow the child to play again with animals, vaccination prevent occurrence of rabies, health teaching of people prevent rabies occurrence, the animal that bites children should be caught or killed, children shouldn't play with non-pet dogs, farm animal can cause rabies.

### Statistical analysis

Statistical Package for Social Studies (SPSS) version 19 was used to organize and analyze data. Mean and SD was used for numerical data. Mann-Whitney test was used to test differences between mean values. Fisher or Monte Carlo exact test were used to test differences between subcategories. Pearson's correlation coefficient was used to test the correlations between two variables.

### Results

**Table (1):** Illustrates of mother's socio-demographic characteristics. It was observed that, nearly equal percentage of (23.7%&22.6%) of mothers, their age were less than 25 years& equal or more than 40 years respectively. Most of the studied mothers (84.3%) lived in rural area. As regard to mothers' educational level 23% were illiterate, 44% of the mothers had secondary education& 21.7% had university education, Slightly less than half of the mothers (49.3%) were working.

It was obvious that 56% of the mothers own animals, and nearly one third (29.7%) has family history of exposure to animal bite. the most common reported causes of bites was related to cats (37.1%), followed by dogs(33.7%),donkeys(18%),horses(10.1%)

and the least percentage (1.1%) caused by mouse

**Table (2):** Illustrates children bio-socio-demographic characteristics. It was found that more than half of the children (51.7%)were in the age from 4-6 years, while22.3% were 7-10 years &26%were 11-14 years, with mean age of (6.36± 3.84) years. Regarding educational level of children, 29% of children were pre-education, 20.3%of children were at nursery school, 37.7% were at primary education and 13%were at preparatory education. It was obvious that the most common cause of bites was cats (43.4%), followed by dogs 27.3%, donkeys 20%, mice 6% , and horses 3.3%. It was observed that, about half of the children (49.3%) exposed to bite at the upper trunk, followed by 43.6% at lower trunk, 23.7% at the face, and 8.3% at buttocks.

**Table (3):** shows mothers total knowledge regarding animal bites, it was clear that, incorrect or didn't know answers was reported by 64.3% of the mothers for definition. The majority of the mothers (84%) didn't know the causes and nearly equal percentage (43% & 42.7% ) of the mothers answered incorrect/don't know or correct/incomplete answer respectively for dangerous sites of bites. The majority of the mothers (96.3%) had correct but incomplete answer for complications. Three quarters of mothers (75.7%) didn't know the doses of anti-rabies vaccine, while 68.7% had correct incomplete answers about how to deal with animal attacked the child.

**Table (4):** Represents relation between mothers' total level of knowledge and their socio-demographic data. It was found that, there was significant relations between mothers' age and their knowledge (P=0.001). Most of the mothers (80.6%)

who were from rural areas had low level of knowledge with highly statistical significance differences ( $P=0.001$ ). Statistical significance relations were also noticed between educational level and mothers total knowledge ( $p=0.001$ ).

**Table (5):** it was found that older age mothers and rural residence showed positive attitude with highly statistical significant differences ( $P=0.001^*$ ). There was statistical significant difference regarding educational level and total attitude ( $P=0,001^*$ ). Mothers who owned animal showed positive attitude regarding animal bites more than the mothers who didn't own animals with highly statistical significant differences ( $P=0.001^*$ )

**Figure (1):** shows distribution of mothers' total level of knowledge about animal bites . It was evident that, the majority of the studied mothers (92.7%) had low level of knowledge about animal bites. While 7.3% of them had moderate level. It was clear that, none of the mothers had high level of knowledge.

**Figure (2):** Regarding total practice reported by mothers about animal bites, it was found that 76.7% of the mothers had unsatisfactory practice compared to 23.3% of them had satisfactory practice.

**Figure (3):** Total scores of mothers' attitudes regarding animal bites. It was clear that, more than three quarters of the

mothers (77%) had negative attitude regarding animal bites. compared to 23% of them who had positive attitude.

**Table (1): Percentage distribution of the studied mothers regarding Socio-Demographic characteristics.**

Socio-demographic characteristics of mothers	(n = 300)	
	No.	%
<b>Mothers' age</b>		
<25	71	23.7
25<30	11	3.7
30<35	57	19.0
35<40	93	31.0
≥40	68	22.6
Mean ± SD.	33.40 ± 7.19	
<b>Residence</b>		
Rural	253	84.3
Urban	47	15.7
<b>Educational level</b>		
Illiterate	69	23.0
Primary education	34	11.3
Secondary education	132	44.0
University education	65	21.7
<b>Occupation</b>		
Working	148	49.3
Not working	152	50.7
<b>Family size</b>		
3<5	149	49.7
5<7	135	45.0
≥7	16	5.3
Mean ± SD.	4.66 ± 1.34	
<b>Animals' ownership</b>		
Yes	132	44.0
No	168	56.0
<b>Previous exposure of any family members to animal bite.</b>		
Yes	89	29.7
No	211	70.3
<b>Yes answers (n = 89)</b>		
Dog	30	33.7
Cat	33	37.1
Horse	9	10.1
Mouse	1	1.1
Donkey	16	18.0

**Table (2): Percentage distribution of children according to bio- socio- demographic characteristics. (n=300)**

<b>Bio-Socio-Demographic characteristics of the children</b>		
	<b>No.</b>	<b>%</b>
<b>Age in years</b>		
4-6	155	51.7
7-10	67	22.3
11-14	78	26
Mean ± SD.	6.36 ± 3.84	
<b>Sex</b>		
Male		58.7
Female		41.3
<b>Educational level</b>		
Pre-education	87	29
Nursery school	61	20.3
Primary school	113	37.7
Preparatory school	39	13.0
<b>Causes of child' bites.</b>		
Cat	130	43.4
Dog	82	27.3
Donkey	60	20.0
Horse	10	3.3
Mouse	18	6.0
<b>Sites of bites #</b>		
Face	71	23.7
Upper trunk	148	49.3
Lower Trunk	131	43.6
Buttocks	25	8.3

#:more than one answer.

**Table (3): Mothers' total knowledge regarding animal bites (n=300)**

Mother' total knowledge	Mothers' knowledge (n=300)					
	Incorrect or don't know		Correct and incomplete		Correct and complete	
	No.	%	No.	%	No.	%
Definition	193	64.3	107	35.7	0	0.0
Causes	252	84.0	0	0.0	48	16.0
Types	21	7.0	269	89.7	10	3.3
Signs and symptoms	16	5.3	274	91.3	10	3.3
Dangerous sites of bites	129	43.0	128	42.7	43	14.3
Complications	0	0.0	289	96.3	11	3.7
Cause of rabies.	182	60.7	118	39.3	0	0.0
Doses anti-rabies vaccine.	227	75.7	0	0.0	73	24.3
Dealing with the animal attacked the child	94	31.3	206	68.7	0	0.0

Table (4): Relation between mothers total knowledge and their socio-demographic characteristics (n = 300)

Socio-demographic characteristics of mothers	Level of overall knowledge						$\chi^2$	P
	Low		Moderate		High			
	No.	%	No.	%	No.	%		
<b>Mothers' age</b>								
<25	71	23.6	0	0.0	0	0.0	34.10	<0.001*
25<30	11	3.7	0	0.0	0	0.0		
30<35	46	19	11	3.7	0	0.0		
35<40	93	31	0	0.0	0	0.0		
>40	57	22.7	11	3.7	0	0.0		
<b>Residence</b>								
Rural	242	80.6	11	3.7	0	0.0	21.181	<0.001*
Urban	36	12.0	11	3.7	0	0.0		
<b>Educational level</b>								
Illiterate	58	19.3	11	3.7	0	0.0	26.715	<0.001*
Primary education	34	11.3	0	0.0	0	0.0		
Secondary education	131	43.7	1	0.3	0	0.0		
University education	55	18.3	10	3.3	0	0.0		
<b>Occupation</b>								
Working	137	45.7	11	3.7	0	0.0	0.004	0.948
Not working	141	47.0	11	3.7	0	0.0		
<b>Animals' ownership</b>								
Yes	121	40.3	11	3.7	0	0.0	0.347	0.556
No	157	52.3	11	3.7	0	0.0		

 $\chi^2$ : Chi square test

MC: Monte Carlo

FE: Fisher Exact

p: p value for Relation between knowledge and socio-demographic characteristics of the mothers

\*: Statistically significant at  $p \leq 0.05$ 

N.B. There is no high level of knowledge.

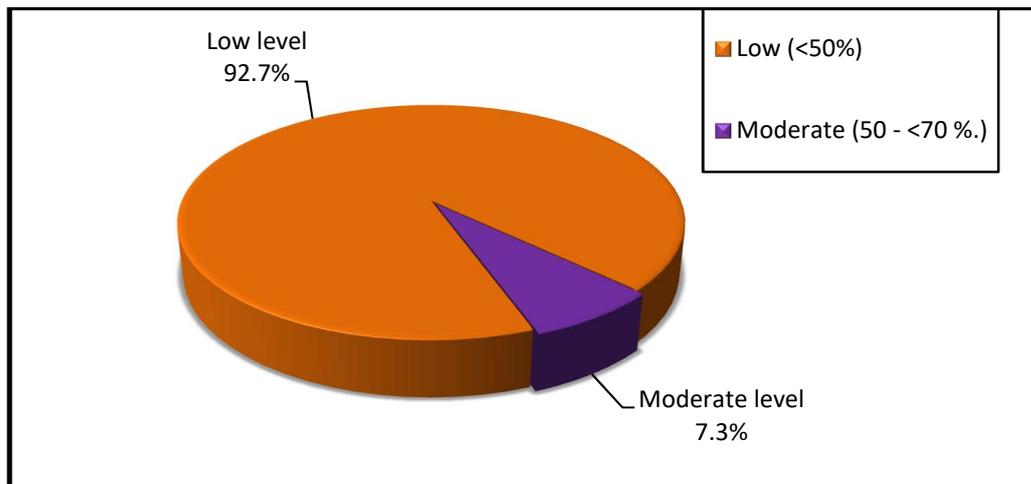
**Table (5): Relation between Mothers Attitudes and their Socio-demographic Characteristics Data (n=300).**

Socio-demographic characteristics of studied mothers	Level of overall Attitudes				$\chi^2$	P
	Negative		Positive			
	No.	%	No.	%		
<b>Mothers' age</b>						
<25	55	18.3	16	5.3	33.215	<0.001*
25<30	10	3.3	1	0.3		
30<35	57	19.0	0	0.0		
35<40	70	23.3	23	7.7		
>40	39	13.0	29	9.7		
<b>Residence</b>						
Rural	186	62.0	67	22.3	11.057	0.001*
Urban	45	15.0	2	0.7		
<b>Educational level</b>						
Illiterate	64	21.3	5	1.7	38.379	<0.001*
Primary education	34	11.3	0	0.0		
Secondary education	81	27.0	51	17.0		
Universal education	52	17.3	13	4.3		
<b>Occupation</b>						
Working	113	37.7	35	11.7	0.069	0.792
Not working	118	39.3	34	11.3		
<b>Animals' ownership</b>						
Yes	89	29.7	43	14.3	12.204	<0.001*
No	142	47.3	26	8.7		

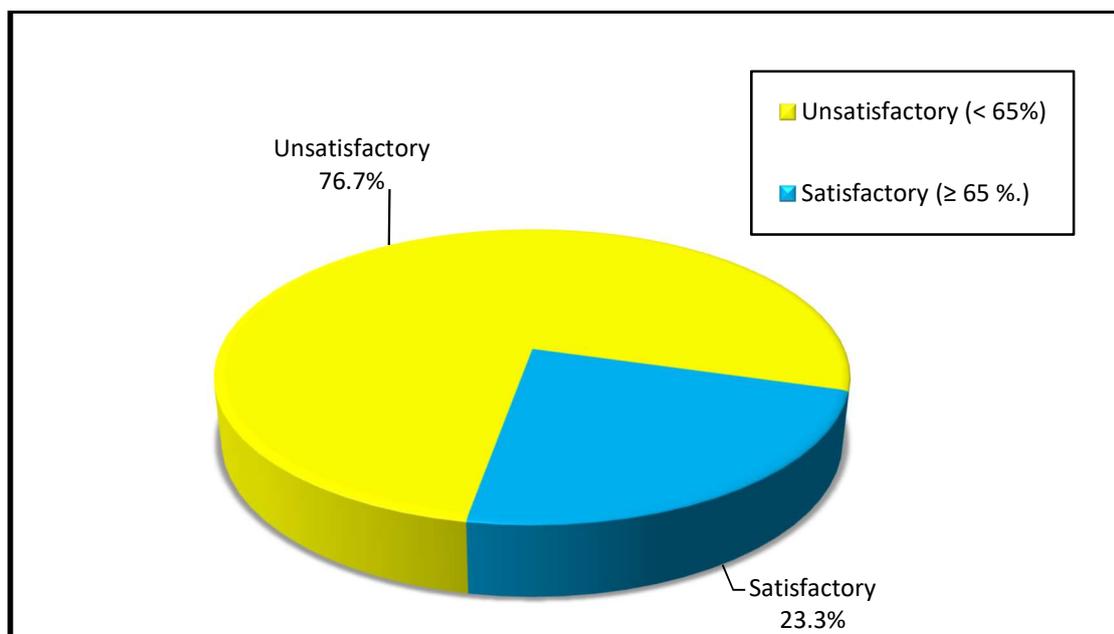
$\chi^2$ : Chi square test

p: p value for Relation between Attitudes and socio-demographic characteristics of the mothers

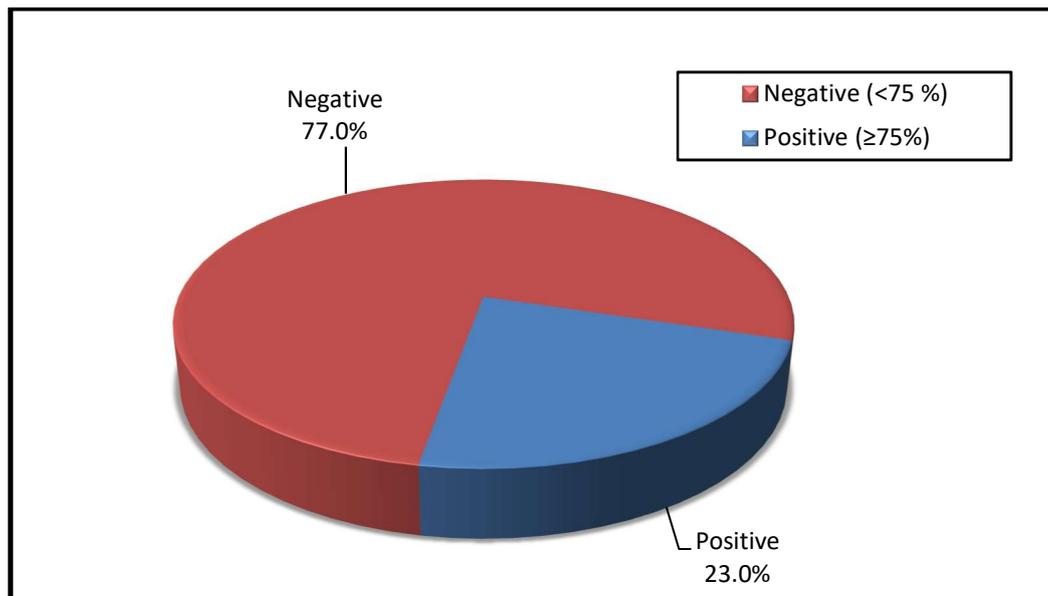
\*: Statistically significant at  $p \leq 0.05$



**Figure (1): Mothers' total level of knowledge regarding animal bites**



**Figure (2): Mothers' overall practice of wound care.**



**Figure (3): Mothers' total attitudes score**

#### **Discussion:**

It was noticed that, more than three quarters of the studied mothers were from rural areas and a significant percentage nearly one quarter of them were illiterate, while less than half of them had secondary education. This finding was matched with the result of **Elkholy et al., (2021)** who conducted a study on "Knowledge and Attitude of Mothers Regarding Rabies and its Preventive Measure", who showed that less than half of the mothers in their study had secondary educational level.

It was noticed that, more than half of the children complaining from animal bites were male. This may be because male children usually were more hyperactive, play outside the home and more curious to play with animals like dogs & cats more than girls. This finding was matched with **Moumita S. et al., (2016)**. who conducted a study on "Animal Bites and Rabies Prophylaxis in Rural Children in India and reported that male

children were found to be twice as commonly bitten as females.

The results of the current study revealed that about half of the animal bites occur due to cat scratches and bites, followed by less than one third due to dog bites. This may be because cats are the most common animals in rural area as they live at homes, streets and everywhere. This finding is in contrast with **Chaudhuri (2016)** who studied "Epidemiology and surveillance of human animal-bite injuries and rabies post-exposure prophylaxis, in selected counties in Kenya", who reported that the most common animals were dogs more than three quarters, followed by nearly one tenth for cat bites.<sup>(19)</sup>

It was observed that, about half of the children exposed to animal bites at the upper trunk, followed by one third at lower trunk, less than one quarter at the face, this may be attributed to that the child defended himself by their extremities and protect their face by hands. These findings are in the same line with

**Ovais1 (2017)** who studied "Analysis of dog bite injuries in Kashmir". Who found that, the face was the common affected organ by the dog bite of less than half of children aged between 1-6 years. Limbs were most commonly affected in older age group.

According to mothers' knowledge about most dangerous sites of animal bites, the current study showed that, more than half of the mothers reported head& face as dangerous sites followed by abdomen, then upper limbs& chest. Nearly one third of the mothers didn't know which site is more dangerous, this may be due to lack of knowledge about animal bites and may attributed to illiteracy rate as nearly one quarter of the mothers were illiterate. These results are in the same line with **Datta S., (2016)** who studied "Knowledge Attitude and Practices Regarding Dog Bite and its Management and found that most of the participant in their study reported that any site of the body were dangerous after dog bite, and about one quarter reported that face, neck & head were dangerous sites.

Concerning of the mothers' total knowledge score regarding animal bites of their children, the current study revealed that; majority of the studied mothers had poor level of knowledge regarding animal bites. This might be due to lack of awareness program related to animal bites prevention and the nature of rural areas that is lack of accessibility to obtain knowledge and awareness from health sectors. This finding agreed with **El-kholy N., (2021)** who conducted study on " Knowledge and Attitude of Mothers Regarding Rabies and its Preventive Measures" they found that; the majority of the studied mothers had low knowledge score regarding animal bites& rabies.

Mothers' practices regarding wound care illustrated that nearly three quarters of the mothers washed the wound with soap and water. Also more than three quarters of them clean the wound by betadine or iodine while less than two thirds of them use alcohol. This can be explained as nearly one third of the families had previous history of animal bites and that washing wound is a simple procedure known by mothers.

This finding was contrasted with the result of **Sivagurunathan C., (2021)** who conducted a study on " Knowledge, attitude, and practice study on animal bite, rabies, and its prevention in an urban community " and found that only one third of the participant washed their wound with soap and running water after animal bite and a few percentage applied alcohol or iodine solution at home, the majority received anti-rabies vaccine and were immunized with a single dose of tetanus at hospital.

Regarding commitment to vaccination, the present findings show that most of the mothers adhere to anti-rabies vaccine schedule and more than three quarters of them transferred their children to take immunoglobulin vaccine as needed. This may be related to their fear from the severity of animal bites & for the prevention of rabies and also because mothers receive nursing instructions during their hospital visit after their children exposure to animal bites. This finding was in agreement with **Muthunuwan et al., (2017)** who studied " Preliminary survey on knowledge, attitudes and practices regarding rabies" and found that more than three quarters of the participants were aware that rabies could be prevented by vaccination and the majority seeking treatment from a doctor or hospital.

Another study by **Datta S., (2016)** who conducted study on "Knowledge Attitude and

Practices Regarding Dog Bite and its Management Among Adults" was in agreement with the current findings as they reported that more than one quarter of the participant in their study wash the wound with soap & water, and half of them tightly tie above the site of bite, half of the participant take anti-rabies vaccine and little percentages inject tetanus toxoid and use antiseptic bandaging.

Concerning to mothers' attitudes regarding animal bites, it was noticed that less than three quarters of the mothers had negative attitudes toward animals' bites of their children. This may be explained as lack of mothers & community awareness about preventive measures related to animal bites & rabies affect participant mothers' attitude. Also the nature of rural community that affect accessibility to health services and education may had negative effect on mothers attitude. A study by **Hagos (2020)** entitled "Assessment of knowledge, attitude and practice towards rabies and associated factors among household heads in Mekelle city " was contradicted with the current results. They related to that more than half of the participant in their study had positive attitude toward animal bites.

On the other hand, this finding was contradicted with **El-kholy (2021)**, who studied " Knowledge and Attitude of Mothers Regarding Rabies and its Preventive Measure and mentioned that; slightly less than three fifths of the studied mothers had indifferent total attitude score regarding rabies, less than one third had positive attitude, and little percentage had negative attitudes.

More than three quarters of the mother was agreeing about immediately transferring the bitten child to hospital, in addition to the necessity of taking vaccination regularly. This finding was in congruent with **Ghosh (2016)**

who studied " Awareness of rabies and response to dog bites in a Bangladesh community" who found that more than half of the dog bite victims first seek treatment from traditional healers instead of visiting the hospitals, while few have not taken any measures.

As regards to relation between the studied mothers' knowledge & their socio-demographic characteristic, the present study results show a statistically significant relation between socio demographic characteristics of the studied mothers and knowledge regarding animal bites. That increase mothers' age & educational level increase level of knowledge. These results were in the same line with **Sivagurunathan et al., (2021)** who conducted study on " Knowledge, attitude, and practice study on animal bite, rabies, and its prevention in an urban community" reported that; there were highly statistically significant relations between demographic characteristics of the studied mothers and their age, educational level, occupation, and family size in their study.

According to relation between the studied mothers attitudes regarding animal bites & their socio- demographic characteristics, the present study revealed that; there were highly statistical significant relationship between the studied mothers' attitudes and their socio demographic characteristics (age, educational level, occupation, residence, animal's ownership). This may be attributed to most of the mothers in the current study were from rural area, and a significant percentage was illiterate so, their attitude may negatively affected. These results were in disagreement with **Tandon et al (2017)** who reported that; there were not significant relations between the studied mothers' attitudes and their socio demographic characteristics (age, educational

level, occupation, residence, family income and family size) ( $p > 0.05$ ) in their study. The current study revealed that the participated mothers in the current study had low level of knowledge, unsatisfactory practice and negative attitude regarding animal bites. This can be explained as mothers hadn't attended awareness program and didn't receive sufficient information about animal bites. This finding was in agreement with **Muthunuwan 2017** who conducted study on "Preliminary survey on knowledge, attitudes and practices regarding rabies" and found that there was a lack of knowledge and unsatisfactory practice regarding animal bites and prevention of rabies between the participants of the study.

### Conclusion and Recommendations

In the current study it was concluded that: Mothers who participated in the current study had low level of knowledge and unsatisfactory practice regarding animal bites. Most of the mothers in the present study had negative attitude regarding animal bites. There were statistically significant relations between mothers' total knowledge, total practice and total attitude with their socio-demographic characteristics.

### Recommendations:

Based on the findings of the present study, the following recommendations were suggested:

1. Educational program and awareness program should be performed for mothers and children about prevention and caring of animal bites and rabies should be conducted at emergency to improve their perception of animal bites.
2. Manual log book about care of animal bite wounds and anti-rabies vaccination should be available to mothers at emergency department as a reference.

3. Further researches should be conducted to assess children knowledge about animal bites and its prevention.

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