

Mother's Care for Child with Typhoid Fever

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Abstract:

Background: Typhoid fever is an acute bacterial infection caused by salmonella typhi. Typhoid is endemic to low- and middle-income countries. Children are at the greatest risk of getting the disease. **Aim:** This study aimed to assess mothers' care for a child with typhoid fever. **Design:** Descriptive design was used to conduct this study. **Setting:** The study was conducted at fever hospitals in Gharbiya governorate. Two cities was chosen from Gharbiya governorate (Tanta fever hospital and Kafr-Elzayat fever hospital). The highest frequency of children with typhoid fever was found in these two hospitals. **Sample:** A purposive sample of 130 mothers. **Tools:** One tool was used for data collection, this interviewing questionnaire developed by the investigator was divided into four parts: **part I:** Demographic characteristics of the studied children and their mothers, **part II:** Medical history of children, **part III:** Mothers' level of knowledge about typhoid fever, **Part IV:** Assessment of mothers' reported practices regarding care for their children with typhoid fever. **Results:** 53.8% of mothers hadn't done the correct practices regarding care for their children with typhoid. According to their total level of Knowledge, 60.8% of mothers had unsatisfactory level of knowledge about typhoid fever. According to their total practices, 66.2% of mothers had unhealthy practices about care for children with typhoid fever. **Conclusion:** There were highly statistically significant relation between the studied mothers' level of knowledge and their level of practice, with p-value ($p < 0.001$). **Recommendations:** It is necessary to establish an educational program to provide mothers with adequate knowledge and practice regarding caring for their children with typhoid fever.

Keywords: Children, Mothers care, and Typhoid fever.

Introduction:

Typhoid fever is an acute systemic bacterial infectious disease that only affects humans and is a major public health concern around the world. It's a systemic infection that's a serious cause of disease and death in low-resource settings (Ryan et al., 2020).

According to the World Health Organization, approximately 20 to 30 million cases of typhoid fever occur every year, with a fatality rate of 1-4 percent. Typhoid fever specifically targets school-aged children between the ages of 5 and 15, but it has also been reported in younger children (Ameh et al., 2020).

Typhoid fever is most common in areas of the world where sanitation is poor and clean water is limited. Children are regarded as the most vulnerable to typhoid fever around the world because their immune systems are still maturing. Children, on the other hand, have milder symptoms than adults when it comes to typhoid fever (Holtz, 2022).

In families, a mother is primarily responsible for the family's health. The relationship between family health, care, and mothering practises is complex. Healthy food, sleep, exercise, medications, hygiene, health prevention such as immunisation, and safety are all areas in which the mother plays a role in the family's health (Accardo, 2019).

Mothers have a critical role to play; they can help their children recover faster by following some tips such as offering them a lot of fluids during the day. Also, they can try giving the sick children frequent small, nutritious meals rather than three large meals a day. In addition, they can make sure that the sick children get plenty of rest while they have a fever. Moreover, being sure of giving the medicine on time as the doctor prescribes is highly important (Kaushik, 2018).

Community health nurses play an important role in the prevention and control of typhoid diseases by responding to public health

issues, ensuring the use of available health services, providing health education for mothers, and providing care management to vulnerable groups (children and families), raising public and maternal awareness about personal hygiene, and ensuring the availability of safe water and proper sanitation systems (Nies & Mcewen, 2019).

Significance of the study:

Egypt has the highest population density in the Middle East, Northern Africa, and the Mediterranean basin. Egypt is one of the developing countries where typhoid fever is becoming more prevalent (Holtz, 2022).

Concerning the incidence of typhoid fever in Africa, about 2, 655, 000 including 130, 000 of them are fatal. In Africa including Egypt, the incidence of typhoid is about 10 to 100 per 100 000 case/year (Berger, 2021). The numbers of typhoid fever cases in Fayoum governorate were 59 cases per 100 000 per year (Mohamed et al., 2020).

Aim of the study:

The aim of the study is to assess mothers' care for child with typhoid fever; through:

- 1- Assessing mothers' knowledge related to typhoid fever.
- 2- Assessing mothers' reported practices related to care for child with typhoid fever.

Research Questions:

- 1- Is there a relation between mothers' Knowledge and their socio-demographic characteristics ?
- 2- Is there a relation between mothers' knowledge and their reported practices of mothers' related to care for child with typhoid fever?

Subjects and Methods**Research Design:**

A descriptive study was used to meet the aim of the study.

Setting:

The study was conducted at the outpatient clinics of fever hospitals in Gharbiya

governorate. Two cities were chosen from Gharbiya governorate (Tanta fever hospital and Kafr-Elzayat fever hospital). The medical service was provided through the internal clinic for all ages. The highest frequency of children with typhoid fever was found in these two hospitals.

Subjects:

The study included 130 mothers who cared for their children with the following criteria: confirmed diagnosis of typhoid fever in the age of 1-15, and free of congenital diseases at the previously mentioned study setting. This number represents the number of children infected with typhoid fever at the time of data collection, at a rate of two days per week for each hospital.

Tools of data collection:

Data for this study was collected through using the following tool: one tool was used.

Tool I: Interviewing questionnaire that was developed by the investigator after reviewing the relevant recent literature and was written in a simple Arabic language and consisted of four parts to collect data as follows:

Part I: Demographic characteristics of the studied children including age, gender, educational level, child birth order in the family & characteristics of their mothers including age, occupational state, education level, social status, family income and residence (questions No.1 to 10).

Part II: Medical history of children including previous exposure to typhoid, time of previous exposure to typhoid, recurrence of previous typhoid, number of previous hospitalization with typhoid, diagnostic method for confirming typhoid, and previous vaccination for typhoid (questions No.11 to 16).

Part III: mothers' level of knowledge about typhoid fever (definition, causes, symptoms, transmission, diagnose, medical treatment, complications, prevention, care for a child with typhoid fever and source of mothers'

knowledge about typhoid) (questions No.17 to 26).

❖ Scoring System

Each item was scored 1 for a correct answer and 0 for an incorrect answer. For each area of knowledge, the score of the items was summed up and the total was divided by the number of the items. These scores were converted into a percent score. The total score of all questions was represented in 100% and categorized into two levels_ knowledge was considered a satisfactory level if equal or more than (≥ 50) and unsatisfactory level if less than ($< 50\%$) (Abdullah et al., 2021). Total score of knowledge (ranged score 0-9): Satisfactory knowledge $> 50\%$ (ranged score 5-9), and unsatisfactory knowledge $\leq 50\%$ (ranged score 0-4). The question about sources of knowledge was excluded from the scoring system.

Part IV: Mothers' reported practices regarding care for their children with typhoid fever. It was adopted after reviewing the relevant recent literature and was modified by the investigator to meet the aim of the study and it included hand washing (Fuller, 2017), mothers' practices regarding water and food sanitation (Potter et.al., 2017) & (Duyff, 2017), mothers' hygienic practices with their sick children (Devaranavadi, 2017) & (Williams, 2018), measuring temperature by oral or axillary, or rectal or sensitive strips (West, 2017), and mothers' actual care during fever (Kaushik, 2018).

❖ Scoring system

Related to practice assessment; every done answer was scored 2 degrees and 1 for not done answer, for each area of practice, the score of the items was summed up and the total was divided by the number of the items, giving a mean score for the item. These scores were converted into a percent score; the whole practices' questions were scored 100% equal 218, the total of 60% and above represented achieved practices and less than 60% represented not achieved practices (Mohamed E. et al., 2018). Total score of practice (Ranged score 0-218): Healthy practice $\geq 60\%$ (Ranged score 131-218), and, unhealthy practice $< 60\%$ (Ranged score 0<131).

Pilot study:

The pilot study was conducted on 30%; representing 39 mothers of the total study sample, the aim of the pilot study was to evaluate feasibility, applicability and, efficiency, as well as the time required to fulfill the developed tools. The sample of the mothers in the pilot study was included in the main study sample as there were no modifications done.

Administrative design:

Before starting work and taking permission for conducting this study, a formal letter was issued from the dean of the Faculty of Nursing, Ain Shams University to the directors of hospitals selected for the study describing the aim of the study. The researcher visited the outpatient of the study regularly to collect data then oral consent was obtained from the mothers for the approval on participation in the study.

Ethical consideration:

Approval of scientific research ethics committee at Faculty of Nursing, Ain Shams University was taken. An official permission was obtained before conduction of the study. The aim of the study was explained to the mothers of children with typhoid fever to obtain their cooperation. Oral consent was obtained from the mothers to ensure willingness to engage in the study. The researcher maintained anonymity and confidentiality of the subjects' data. The subjects were allowed to choose to participate or not and they were informed that they have the right to withdraw from the study at any time without giving any reason.

IV-Statistical analysis:

The collected data was organized, categorized, tabulated, analyzed and presented in numbers. The percentage was in the form of tables and the figures used appropriate statistical techniques and tests of significance. The following statistical analysis tests were used: Number & percentage, chi-square (χ^2) and proportion probability of error (p value).

Results:

Table (1): shows that, the mean age of the studied children was 6.22 ± 2.18 . In addition, 66.9% of them were male. Regarding educational level 36.9% of them were at pre-nursery, as well as regarding child birth order 48.5% of them were the first child.

Table (2): illustrates that, the mean age of the studied mothers were 26.42 ± 5.02 . while, 74.6% of them were house wives. 49.2% were intermediate education, regarding social status 81.5% of them were married. On the other hand, 59.2% have enough family income while 55.4% of them were from rural area.

Fig (1): explain that, 39.2% of mothers had a satisfactory level of knowledge about typhoid fever. While, 60.8% have unsatisfactory level of knowledge about typhoid fever.

Fig (2): reveals that 66.2% of mothers reported that they had not done healthy practices about care for child with typhoid fever. However, 33.8% of mothers reported that they had done healthy practices.

Table (3): shows that there were highly statistically significant relations between the studied mother's level of knowledge and their occupational state, education level, with p-value ($p < 0.001$). Besides, there were statistically significant relations between the studied mother's level of knowledge and their family income and residence, with p-value ($p < 0.05$).

Table (4): shows that there were highly statistically significant relations between the studied mother's level of practice and their occupational state, with p-value ($p < 0.001$), and there were statistically significant relations between the studied mother's level of practice and their age, education level, family income and residence, with p-value ($p < 0.05$).

Table (5): shows that there were highly statistically significant relation between the studied mother's level of knowledge and their level of practice, with p-value ($p < 0.001$).

Table (1): Distribution of children according to their demographic characteristics (N=130).

Demographic characteristics of child	No.	%
Age (years)		
1< 5 years	84	64.6
5<10 years	25	19.2
10 <15 years	21	16.2
Mean±SD		6.22±2.18
Gender		
Male	87	66.9
Female	43	33.1
Educational level:		
Pre-nursery	48	36.9
The nursery	40	30.8
Primary stage	28	21.5
Preparatory school	14	10.8
Child birth order on the family:		
The first	63	48.5
The second	31	23.8
The third	22	16.9
The fourth	10	7.7
More than four	4	3.1

Table (2): Distribution of mothers' according to their demographic characteristics (N=130).

demographic characteristics of mother's	No.	%
Age (years)		
<20 years	17	13.1
20<25 years	44	33.8
25< 30 years	36	27.7
≥30 years	33	25.4
Mean±SD		26.42±5.02
Occupational State		
House wife	97	74.6
Working	33	25.4
Education level:		
Do not read or write	7	5.4
Read and write	20	15.4
Basic education	15	11.5
Intermediate education	64	49.2
University education	24	18.5
Social status:		
Married	106	81.5
Divorced	14	10.8
Widow	10	7.7
Family income		
Enough	77	59.2
Not enough	53	40.8
Residence		
Rural	72	55.4
Urban	58	44.6

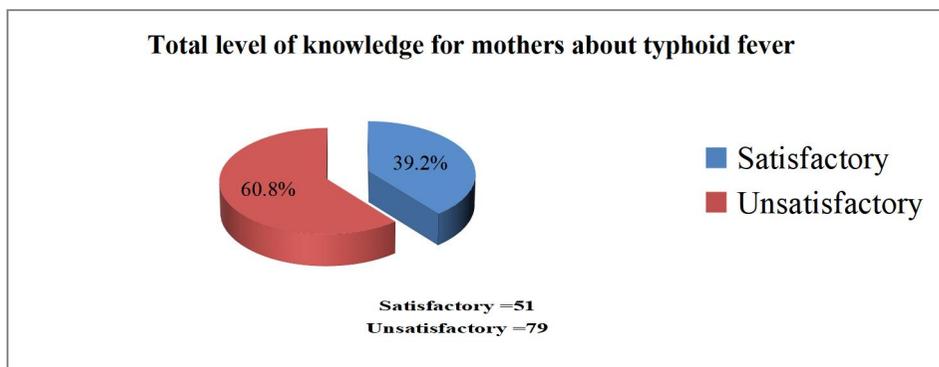


Fig (1): Distribution of mothers' according to their total knowledge score level about typhoid fever.

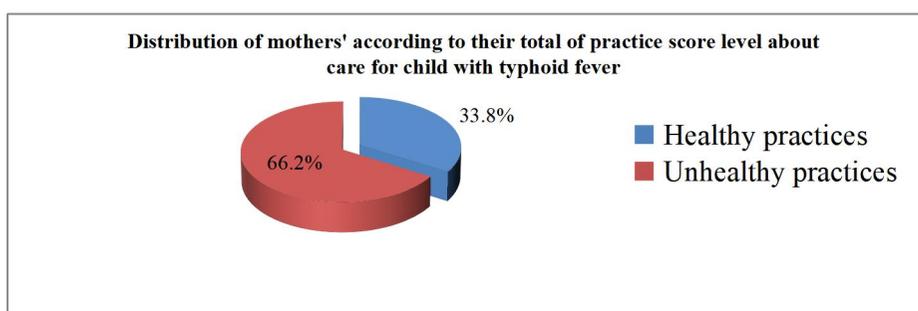


Fig (2): Distribution of mothers' according to their total reported practice score level about care for child with typhoid fever (N=130).

Table (3): Relation between Demographic characteristics data and mothers' level of knowledge (n=130).

Demographic characteristics	Level of knowledge				Chi-square test	
	Satisfied (n=51)		Unsatisfied (n=79)		x ²	p-value
	No.	%	No.	%		
Age (years)						
<20 years	7	13.7	10	12.7	0.745	0.863
20-<25 years	15	29.4	29	36.7		
25< 30 years	15	29.4	21	26.6		
≥30 years	14	27.5	19	24.1		
Occupational state					26.847	<0.001**
House wife	25	49.0	72	91.1		
Working	26	51.0	7	8.9		
Education level:					29.49	<0.001**
Do not read or write	2	3.9	5	6.3		
Read and write	2	3.9	18	22.8		
Basic education	3	5.9	12	15.2		
Intermediate education	24	47.1	40	50.6		
University education	20	39.2	4	5.1		
Social status:					0.663	0.718
Married	40	78.4	66	83.5		
Divorced	6	11.8	8	10.1		
Widow	5	9.8	5	6.3		
Family income					5.29	0.021*
Enough	37	72.5	40	50.6		
Not enough	14	27.5	39	49.4		
Residence					4.311	0.038*
Countryside	22	43.1	50	63.3		
City	29	56.9	29	36.7		

p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 Highly statistically significant.

Table (4): Relation between Demographic characteristics and mothers' reported practices (n=130).

Demographic characteristics	Level of practice				Chi-square test	
	Done (n=44)		Not Done(n=86)		x ²	p-value
	No.	%	No.	%		
Age (years)						
<20 years	2	4.5%	15	17.4%	8.600	0.035*
20-<25 years	13	29.5%	27	31.4%		
25< 30 years	12	27.3%	28	32.6%		
≥30 years	17	38.6%	16	18.6%		
Occupational state						
House wife	23	52.3%	74	86.0%	17.529	<0.001**
Working	21	47.7%	12	14.0%		
Education level:						
Do not read or write	1	2.3%	6	7.0%	12.061	0.017*
Read and write	1	2.3%	19	22.1%		
Basic education	6	13.6%	9	10.5%		
Intermediate education	24	54.5%	40	46.5%		
University education	12	27.3%	12	14.0%		
Social status:						
Married	36	81.8%	70	81.4%	0.089	0.957
Divorced	5	11.4%	9	10.5%		
Widow	3	6.8%	7	8.1%		
Family income						
Enough	33	75.0%	44	51.2%	6.849	0.009*
Not enough	11	25.0%	42	48.8%		
Residence						
Countryside	18	40.9%	54	62.8%	5.640	0.018*
City	26	59.1%	32	37.2%		

p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 Highly statistically significant

Table (5): Relation between mothers' level of knowledge and their level of practice (n=130).

Level of practice	Level of knowledge				Total		Chi-square test	
	Satisfied		Unsatisfied		No.	%	x ²	p-value
	No.	%	No.	%				
Done	42	82.4	2	2.5	44	33.8	24.663	<0.001**
Not Done	9	17.6	77	97.5	86	66.2		
Total	51	100.0%	79	100.0%	130	100.0%		

**p-value <0.001 Highly statistically significant.

Discussion:

Regarding Personal characteristics of children:

Table 1, the current study result revealed that, more than half of the studied children were from 1-5 years. These findings were consistent with **Abdel-Sadik& Khalaf, 2017** who conducted a study about “Maternal Awareness regarding Care of their Children with Typhoid Fever” at Benha fever hospital and Tookh fever hospital with a total subject number 98 children, and found that more than two thirds of the studied children (62.2%) were less than 6 years.

Table 1, the present finding found that more than half of the studied children were 1<5 years. The present findings disagreed with **Said et al, (2017)** who conducted a study about “Integrated Clinical Pathway regarding Care of Children with Typhoid Fever” at Benha fever hospital and Tookh fever hospital with a total subject number 130 children, and found that the majority of the children' ages ranged between 5-10 years. From the investigator's point of view, children aged from one to five years had typhoid more than the other children due to the under developed immune system of children which makes them more prone to salmonella

infection as a few cells are required to initiate infection.

Regarding Personal characteristics of the mothers:

Table 2, the current study result revealed that more than half of the mothers were from rural areas; however, less than half of the studied mothers aged 20-25 years. These findings were in the same line with **Sheded et al., (2018)** who conducted a study about "Changing Patterns and Outcomes of Typhoid Fever in Egypt" at Suez fever hospital and Ismailia fever hospital with total a subject number 590, and found that the majority of the cases were in rural areas.

These findings were also consistent with **Subbulakshmi (2018)** who conducted a study about "The Evolution of Knowledge on Typhoid Fever and its Association with the Demographic Factors among the Mothers in India with a total subject number of 100 mothers, and found, regarding demographic variables, that the majority (76%) of the mothers were in the age group of 20-30 years. However, the results differed in some points including being the majority (63%) of the mothers from urban areas. 42% of the mothers were educated up to the level of primary/secondary school education. Most (62%) of the mothers were not having the enough family income.

From the investigator point of view, in rural areas, there is lack of health services, poor hygiene and sanitation that could negatively affect mothers' and children's health, this makes the child more vulnerable to gastrointestinal diseases such as typhoid fever. Also, younger mothers aged from 20 to 25 years, may have incorrect knowledge and experiences about disease prevention and early treatment.

Regarding mothers' knowledge and reported practices about typhoid fever:

Fig 1, More than one third of mothers had a satisfactory level of knowledge

about typhoid fever. However, more than half had unsatisfactory level of knowledge about typhoid fever.

On the same line, **Subbulakshmi et al., 2018** conducted a study to assess the existing level of knowledge, and noted that 57% of the mothers had inadequate knowledge, 31% of mothers had moderately adequate knowledge and only 12% of mothers had adequate knowledge about the prevention of typhoid fever.

The present results were not compatible with **Getachew et al., 2018** who conducted a study about " Assessment of Knowledge and Risk Perception towards Typhoid Fever among Communities in Mendida Town, Ethiopia 2018" at Ethiopia with a total subject number 423, and reported that (63.8%) of mothers had good knowledge towards typhoid fever. (36.2%) of mothers didn't have the acceptable level of knowledge towards typhoid fever.

From the investigator's point of view, the cause of the high percent of unsatisfactory level of knowledge about typhoid fever could be attributed to the lack of awareness of typhoid fever as a food and water borne disease. In addition, there is no strategy to raise awareness among mothers about the seriousness of the disease.

Fig 2, less than two thirds of the mothers had unhealthy practices about care for their children with typhoid fever. However, more than one third of the mothers had healthy practices.

However, the present study disagreed with the study of **Sadeq& Jabar, 2017** who conducted a study to assess "The Mother's knowledge, Attitude and Practice on Typhoid Fever" in Al-Kadhimiya Pediatrics Hospital, Baghdad, Iraq among 267 respondents according to their practices as about 55.1% of the mothers had a good score, 24.3% of the mothers had a very good score, 20.2% had an average score and 0.4% of the mothers had a low score.

From the investigator's point of view, the difference between the current study and the other study which disagreed with the present findings is that there is a significant difference in the educational level and the level of awareness translated into actions applied by the mothers.

Part V: Regarding to statistical association among study variables. Related to research question NO.2:

Table 3, the present study showed that there were highly statistically significant relations between the studied mothers' level of knowledge and their occupational state, education level, with p-value($p < 0.001$).

Also, the present study agreed with **Sadeq & Jabar, 2017** who revealed that there was a statistically significant association between mothers' educational levels and their knowledge. Chi square test had also showed that there was a statistically significant association between mothers' occupational status and their knowledge.

The present study was on the same line with **Anokye et al., 2018** who conducted a study about " Childhood Fever Knowledge and Management: A case of Mothers with Children under Five Years" at Kwahu, Ghana with a total subject number 100. The results showed that mothers' knowledge had a statistically significant association with their age ($p = 0.0001$) and level of mothers' education ($p = 0.0001$).

From the investigator's point of view, the cause that there is a statistically significant relations between the studied mothers' level of knowledge and their occupational state and educational level is that the experience acquired within the work environment mainly affects the mothers' knowledge about handling and behaving within her family, and the level of education mainly affects the mothers in obtaining awareness and appropriate healthy behaviors to deal with their children.

Table 4, There were highly statistically significant relations between the studied mothers' level of practice and their occupational state, with p-value($p < 0.001$), and there was a statistically significant relation between age, educational level, family income and residence, with p-value ($p < 0.05$).

On the same line with the present study **Ameen, 2019** conducted a study about " Scope of Mothers' Knowledge regarding Child Fever Management in Ranya city/Kurdistan regional government of Iraq" in Iraq with a total subject number 120, which told that there was a positive association between the level of education and mothers' reported practices. Also, the present study agreed with **Hassona M. et al., 2021** who revealed that the bad level of practice was common with the low family income.

From the investigator's point of view, the mothers' educational level basically affects the mothers' ability to implement the necessary measures to protect their children and her family from any danger, and in this case, from typhoid infection. Moreover, Low family income negatively affects all family members. The place of residence also affects the mothers' experience in dealing with the disease as it affects the mothers' perceptions, concepts and beliefs.

Table 5, there was a highly statistically significant relation between the studied mothers' level of knowledge and their level of practice, with p-value ($p < 0.001$). On the same line with the present study, **Abdelfattah et al., 2019** conducted a study about " the Correlation between the Environmental Risk Factors and Typhoid Disease among Children and their Care Givers, Alqalioubiya governorate" at Alqalioubiya with a total subject number 313, which conducted that there was a highly statistically significant positive correlation found between the total knowledge and total practice scores ($p = 0.000$). Also, **Abdel-Sadik & Khalaf, 2017** demonstrated that there was a positive correlation between the total practice & total knowledge scores ($p > 000$).

In the investigator point of view This is due to the fact that knowledge is the first step on the way to implementing any healthy behaviors and practices , by clarifying the importance of them and how to apply these healthy behaviors and practices.

Conclusion:

On the light of the current study results, it can be concluded that there were a highly statistically significant relation between the studied mothers' level of knowledge and their level of practice, with p-value ($p < 0.001$); however, in this study, the mothers' knowledge and practice regarding care for their children with typhoid fever were unsatisfactory.

Recommendations:

The following recommendations were inferred from the study:

- Establishing an educational program to provide mothers with adequate knowledge and practice about typhoid fever and care for children with typhoid fever.
- Continuous supervision and monitoring for early detection of cases of typhoid fever.
- Further research studies are needed for ongoing education for mothers of children with typhoid including large sample for generalization of results.

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