

Quality Of Life for Patients with Typhoid and Paratyphoid Fever in outpatient Clinic at El-minya Fever Hospital

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Abstract: Typhoid and paratyphoid fevers is an acute infectious disease with similar clinical features and characterizes by lesion of Payer's patches, bacteremia, severe intoxication, enlarged liver and spleen. Aim: The study aimed to assess the quality of life for patients with typhoid and paratyphoid fever in outpatient clinic at Elmina fever hospital. Design: Descriptive research design was used in this study. Sample: Purposive sample includes 362 patients diagnosed with typhoid and paratyphoid. Setting: Outpatient clinics in El-Minya fever hospital. Tools: 2 tool used (1)Interview questionnaire sheet include demographic characteristic, past and present history of typhoid and paratyphoid, (2)Quality of Life Scale (QOL) sheet. Results: The study results revealed that 56.1% of studied sample were poor in dietary habits and hygienic measures. Also, 74.3% of studied sample had unsatisfactory level of knowledge about typhoid and paratyphoid fever disease and 59.7% of studied sample had low level of total quality of life. Conclusion: Most of study sample had low quality of life because they had poor dietary habits and poor hygienic measures which lead to exposure to typhoid and paratyphoid fever the majority of them had unsatisfactory level of knowledge about typhoid and paratyphoid fever disease. Recommendations: Developing health educational programs that would help patients to improve their quality of life

Keywords: Typhoid and Paratyphoid Fever, Quality of Life, Patient.

1. INTRODUCTION

Typhoid fever is a systemic infection with the bacterium *Salmonella enteric* serotype typhus. This highly adapted, human-specific pathogen has evolved remarkable mechanisms for persistence in its host that help to ensure its survival and transmission. Typhoid and paratyphoid fevers is an acute infectious disease with similar clinical features. It is transmitted by the fecal-oral route through contaminated water and food⁽²⁾.

Children are most commonly affected. Rates of disease decreased in the developed countries as result of good sanitation and use of antibiotics to treat the disease. An estimated 11–20 million people get sick from typhoid and between 128 000 and 161 000 people die from it every year⁽³⁾.

In developing countries, the identification of risk factors and relevant route of transmission for a disease such as typhoid fever is essential for the development of rational control strategies, Resources could consequently be allocated to where they count most, as construction or expansion of water distribution networks or sewage systems, chlorination of drinking water, insurance of food safety, hygiene education, mass vaccination campaigns, and identification of carriers within or outside the households of patients⁽⁴⁾.

Typhoid and paratyphoid fever affect the whole body, not just the digestive tract (or gut). The start of symptoms for typhoid fever is gradual and may begin with increasing tiredness between 3 to 30 days (usually 8 to 14 days) after you have ingested the bacteria. Symptoms can include; tiredness (lethargy), headache, fever, stomach pain, constipation or severe diarrhea, rose colored spots on the body and weight loss⁽⁵⁾.

Typhoid fever is an acute, life-threatening, febrile illness. Without treatment, the case fatality rate of typhoid fever is 10–30%, dropping to 1–4% with appropriate therapy. Young children are at greatest risk. Common symptoms include sustained fever, chills and abdominal pain. The non-specific symptom profile complicates clinical diagnosis, with symptoms that are common to other diseases occurring in typhoid-endemic areas⁽⁶⁾.

The mainstay for laboratory confirmation is blood culture but this has limited sensitivity of approximately 40–60%, due to the widespread use of antimicrobials before patients present to a health service. The emergence of antimicrobial resistance is a significant challenge, with several recent large outbreaks caused by multidrug-resistant salmonella typhoid in Africa and Asia⁽⁷⁾.

Quality of life refer to degree which an individual is healthy, comfortable, and able to participate in enjoy life events. It is a subjective, multidimensional concept that defines a standard level for psychological, physical, environmental and social well-being⁽⁸⁾.

Community health nurses play a key role in preventing enteric fevers by offering typhoid vaccination and hygiene advice to travelers and managing people who become infected. Nurses should improve public understanding of the risk factors and trends of typhoid and paratyphoid infections and monitor the effectiveness of prevention, including immunization against typhoid and paratyphoid fever⁽⁹⁾.

Significance of the study:

An estimated 11–20 million people get sick from typhoid and between 128 000 and 161 000 people die from it every year⁽³⁾, In Egypt, typhoid and Para typhoid fever had been responsible for acute enteric fever in 7.4 % of patients attending in Abbassia fever hospital. In Fyoum governorate the population-based incidence of typhoid and Para typhoid fever was 59/100.000 patient /year⁽¹⁰⁾

Community health nurse is a corner stone in preventing and management of typhoid and Para typhoid fever through educating community members and reporting all deaths due to diarrheal diseases to health workers , eat foods that have been thoroughly cooked and that are still hot ,ensure that cooked food is covered to protect it from flies .in health facilities, all staff must be repeatedly educated about the need for excellent personal hygiene at work, isolation measures for the client and disinfection measures⁽¹⁾.

AIM OF THE STUDY:

The aim of this study to assess the quality of life for patients with typhoid and paratyphoid fever in outpatient clinic at El- Minya fever hospital.

Research questions

1. Do the patients have knowledge about typhoid and Para typhoid fever disease?
2. Is there a relationship between the quality of life and typhoid fever disease?

2. SUBJECTS AND METHOD

Research Design

A descriptive design was used to conduct this study.

Research Setting:

Outpatient clinics in El-Minya fever hospital including six clinics "four for adult patients and two for child". In each clinic there were one bed & two nurses, one doctor, and one head nurse to all clinics. & office for the doctor & one window and sink for hand washing, About 20 patients of typhoid and paratyphoid fever visit the clinics daily. All clinics were opened in the same direction and fulfilled with personnel protective equipment. One room for lab investigation beside the clinics. Two bathrooms are available for all clinics. Clinics are located in the first floor

Subjects:

Purposive sample includes 362 patients collected through six months for this study according to the inclusion criteria. Patients diagnosed with typhoid and paratyphoid and accept to involve in the study.

Tools of data were collected by using the following 2 tools:**An interview questionnaire Sheet:**

It consists of six major items including: socio demographic data, past & present history about typhoid fever, family history about typhoid and paratyphoid fever, diet habits, the patient's knowledge about typhoid and paratyphoid fever.

Socio demographic data include (12) items like: gender, age categories, marital status, and occupation family number, room number, crowding rate categories, education level, income and smoking.

Past history about typhoid and Para typhoid fever include (5) close ended question like suffering from any chronic disease, abdominal pain, fever, use antipyretic or antibiotic and history of suffering from typhoid and paratyphoid fever.

Diet habits as taking fast food, degree of cleaning fruits and vegetables, taking daily meals at home or from street vendor, source of water supplies and hand washing with soap.

The patient's knowledge about typhoid and paratyphoid fever include (12) close ended questions such as causes of typhoid fever, method of transmission of typhoid, signs of typhoid, risk factors increasing typhoid, what we are doing in case of signs of typhoid, diagnosis of typhoid, prevention of typhoid, complications, and treatment of typhoid and Paratyphoid fever.

Scoring System for patient's knowledge about typhoid and paratyphoid fever:

Correct answer takes one grade and incorrect take 0 grad with a total scores 10 degrees, (<60%) was considered unsatisfactory (≥ 60 -100%) was considered satisfactory.

Tools II: Quality of Life Scale (QOL) sheet:

The QOL scale according to Maes et al., 2015, was used to determine the level of QOL for typhoid fever clients. The scale is constituted of questions and divided into 4 domains such as:

1-Physical / functioning well being include (16) close ended questions such as suffering from fever, nausea and vomiting, constipation, diarrhea, dry mouth, fatigue and restlessness, pain, orthopedic pain, arthralgia, dyspnea, neuropathy, redness, loss of activity, loss of appetite, insomnia and limited daily activity.

2-Psychological that include (8) close ended question such as feeling of happiness, concentration, feeling diseased, feeling of satisfaction, feeling anxious when diagnosed with fever, feeling of anxiety, feeling of depression and feeling of satisfaction with family communications.

3- Social relationships include (6) close ended question such as effect of personal relationship on acquiring the disease, effect of health care on personal needs, dependence on others, difficult on reaching site of treatment and socioeconomic problems related to the typhoid and paratyphoid fever.

4-Environmental that include (7) close ended question such as: rubbish boxes beside the house, spreading of rubbish without boxes beside the house having plan for insects control, sanitation services, present of vegetative land beside sanitation, present of fruits and vegetables vegetation beside sanitation and presence of fast foods beside the house.

Scoring system:

The total score of quality life scale was 120 grades. Each statement was assigned a score according to patients' responses were "Often", "Sometimes", "Never" and were scored 3, 2 and 1 respectively.

It was classified into 3 categories:

- **High** if score $\geq 75\%$.
- **Moderate** if score 60 - < 75%.
- **Low** if score < 60%

Content validity:

The revision of the tools for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of five experts from the community health nursing specialty Helwan University to measure the content validity of the tools and the necessary modification will be done accordingly.

Tools reliability:

To assess reliability, the study tools were tested by the pilot subject's reliability for calculating Cronbach's Alpha which was 0.894 for the interview questionnaire sheet and 0.76 for Quality of Life Scale (QOL) sheet.

• Preparatory Phase:

It includes reviewing of related literature and theoretical knowledge of various aspect of the study using books, articles, internet and magazines to develop tools for data collection.

• Pilot Study:

A pilot study was carried out on 36 patients was included at the actual study sample visiting in the outpatient clinics who fulfilled the inclusion criteria to test the feasibility, objectivity, and applicability of the study tools. In addition, the pilot study gave the investigator experience to deal with the included subjects, the research methodology, and the data collection instruments, and to estimate the needed time to fill the data collection sheets.

• Field Work:

Data of the current study were collected from July 2018 and ended of December 2018, once official permissions were granted. A total number of 326 patients who fulfilled the criteria of inclusion were recruited into the present study.

The investigator collected data 3 day per week, Saturday, Monday, and Wednesday to identify the number of patients visiting the clinics who are diagnosed with typhoid or paratyphoid fever. Then, patients who matched the inclusion criteria and were willing to participate in the study were interviewed; patients' written acceptance to be included in the study was obtained, after explaining the purpose and the nature of the study. From the first contact with the patient the Interview questionnaire sheet was filled. As well the Quality of Life Scale he (QOL): sheet was filled. The investigator collected about 8 – 9 patient per day.

The interview questionnaire sheet collected about 20 minutes according to patient's tolerance and every patient was allowed to ask any question to clear any misunderstanding and to fill out the Interview questionnaire sheet. Regarding this sheet, every interview questionnaire sheet was given to the patient at beginning of the work after explanation of the purpose of this sheet and gave them time to answer these questions.

Ethical Consideration:

Permission has been obtained written from each to participate in the study patient after explanation of the nature and purpose of the study. Each patient was free to either participate or not in this study and had the right to withdraw from the study at any time without any rational; also, patients were informed that data will not be included in any further researches without their permission if they do not mind. Confidentiality and anonymity of each subject were assured through coding of all data. Ethics, values, culture and believes were respected.

Administrative Design:

Approval to carry out this study was by submission of an official letter issued from the Dean of Faculty of nursing, Helwan University, forward to the director of Elminya fever hospital for conducting the study including the aim of the study to obtain the permission to visit the hospital and conduct the study

Statistical Design:

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and Statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test (X^2) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between two ranked variables.

Significance of the results: highly significant at p-value < 0.01. Statistically significant was considered at p-value < 0.05. Non-significant at p-value > 0.05

3. RESULTS

Table (1) Shows that, 58.6% of studied sample were male. Also, the mean ages of patients were 34.6 ± 9.7 years. Moreover, 49.4% of studied sample were married. The majority of the study sample 73.5% was rural. Also, (47.5%, 44.2% & 54.1%) of studied sample family member were 3-5, number of rooms were < 3 and the crowding index was 2-3, respectively.

Also, 37.6% & 39.2% of studied sample were reading and writing and literal respectively. Regarding to income 45.3% of studied sample was unsafe and not efficient. Moreover, 72.9% of them nonsmoker, 61.2% of them smoked cigarette.

Table (2): Shows that, 62.2% & 60.8% of studied sample were washed cooking equipments out of home and drank any juice out of home routinely, while 51.9% & 51.1% of studied sample didn't wash their hands during the day before eating, after eating and didn't wash their hands after using W.C, respectively.

Figure (1): This figure shows that, (56.1%) of studied sample were poor in dietary habits and hygienic measures.

Figure (2): This figure shows that, (74.3%) of studied sample had unsatisfactory level knowledge about typhoid fever disease.

Table (3): Shows that, (61.3%, 58.5% & 52.5%) of studied sample had low level of quality of life at environmental condition, physical status and psychological status, respectively.

Figure (3): Shows that, (60.7%) of studied sample had low level of total quality of life.

Table (4): Shows that, there was highly statistically significant relation between total knowledge about typhoid and paratyphoid fever disease and residence and educational level at ($P = < 0.01$). Moreover, there was statistically significant relation between total knowledge about typhoid fever disease and their age, crowding index, occupation and income at ($p = < 0.05$). While, there was statistically insignificant relation between total knowledge about typhoid fever disease and sex, social status ($p = > 0.05$).

Table (5): Shows that, there was highly statistically significant relation between total quality of life for studied sample about their residence and occupation ($P = < 0.01$). Moreover, there was statistically significant relation between total quality of life of studied patients and their sex, crowding index, educational level and income ($p = < 0.05$). While, there was statistically insignificant relation between total quality of life of studied sample and age and social status ($p = > 0.05$).

Table (6): Show positive correlation between total knowledge of the studied sample regarding to typhoid and paratyphoid fever disease and their dietary habits. Moreover, there was positive correlation between total knowledge of the studied sample and their quality of life.

Table (1): Frequency Distribution of the Studied Sample According to their Socio-Demographic Characteristics. (N=362)

Demographic Characteristics of patients	No	%
Sex		
Male	212	58.6
Female	150	41.4
Age		
<20 years	62	17.1
20-29 years	95	26.3
30-40 years	122	33.7
>40 years	83	22.9
$\bar{x} \pm SD$	34.6±9.7	
Social status		
Single	97	26.8
Married	179	49.4
Divorced	52	14.4
Window	34	9.4
Residence		
Rural	266	73.5
Urban	96	26.5
Number of family member		
< 3	79	21.8
3-5	172	47.5
>5	111	30.7
Number of rooms		
< 3	160	44.2
3-5	119	32.9
>5	83	22.9
Crowding index		
2-3	196	54.1
4-5	62	17.1
>5	104	28.8

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Continue Table (1): Frequency Distribution of the Studied Sample According to their Socio-Demographic Characteristics. (N=362)

Educational level		
Illiterate	105	29
Reading and writing	136	37.6
Basic education	83	23
Higher education	38	10.4
Occupation		
Employee	98	27.1
Literal	142	39.2
Housewife	110	30.4
Student	12	3.3
Income		
Safe and efficient	46	12.7
Safe and not efficient	152	42
Un Safe and not efficient	164	45.3
Smoking		
Smoker	98	27.1
Non smoker	264	72.9
Smoking type (N= 98)		
Cigarette	60	61.2
Shisha	38	38.8

Table (2): Frequency Distribution of the Studied Sample According to their Dietary Habits and Hygienic Measures. (N=362)

Items	Often		Sometimes		Never	
	N	%	N	%	N	%
Hand washing during the day before eating and after eating.	72	19.9	102	28.2	188	51.9
Washing vegetables.	78	21.5	109	30.1	175	48.4
Intake of candy food.	166	45.9	106	29.2	90	24.9
Washing cooking tools out of home.	225	62.2	90	24.9	47	12.9
Eating breakfast at home.	80	22.1	132	36.5	150	41.4
Eating breakfast out of home.	150	41.4	132	36.5	80	22.1
Eating meat out of home.	198	54.7	92	25.4	72	19.9
Drinking any juice out of home.	220	60.8	80	22.1	62	17.1
Hand washing after W.C.	82	22.7	95	26.2	185	51.1
Using W.C out of home.	190	52.5	82	22.7	90	24.8

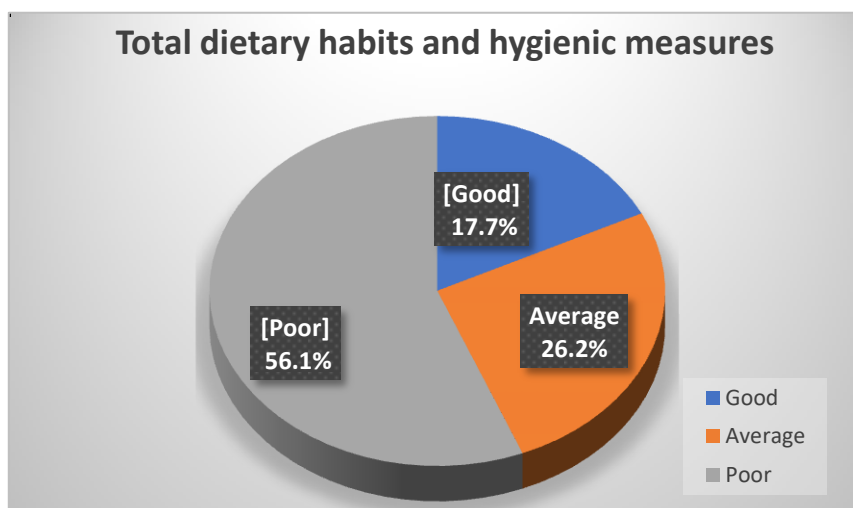


Figure (1): Frequency distribution of the studied sample according to their total dietary habits and hygienic measures. (N=362)

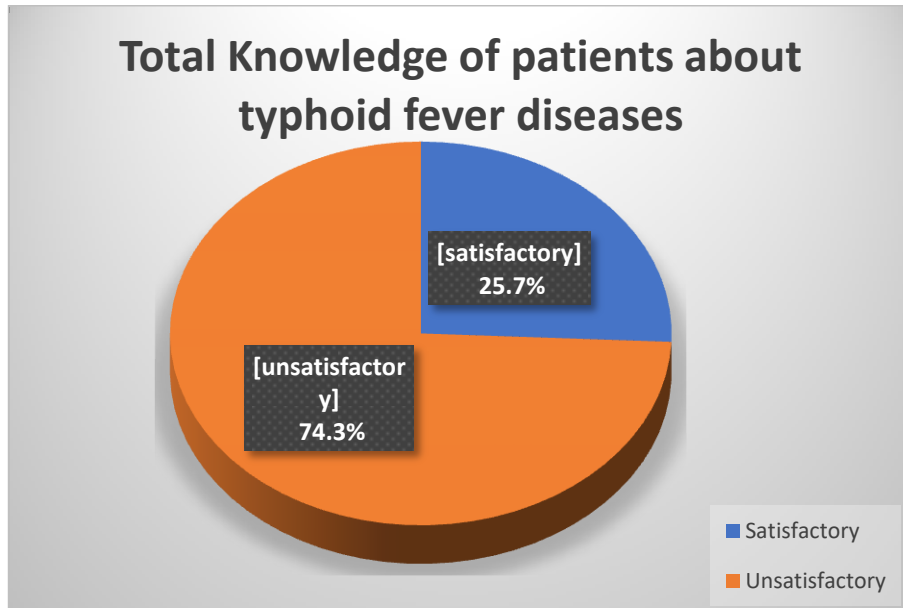


Figure (2): Frequency distribution of the studied sample according to their total knowledge about typhoid fever disease. (N=362)

Table (3): Frequency Distribution of the Studied Sample According to their Total Quality of life. (N=362)

Items	High		Moderate		Low	
	N	%	N	%	N	%
Physical Status	40	11.1	110	30.4	212	58.5
Psychological Status	70	19.3	102	28.2	190	52.5
Social Status	60	16.6	130	35.9	172	47.5
Environment Status	55	15.2	85	23.5	222	61.3

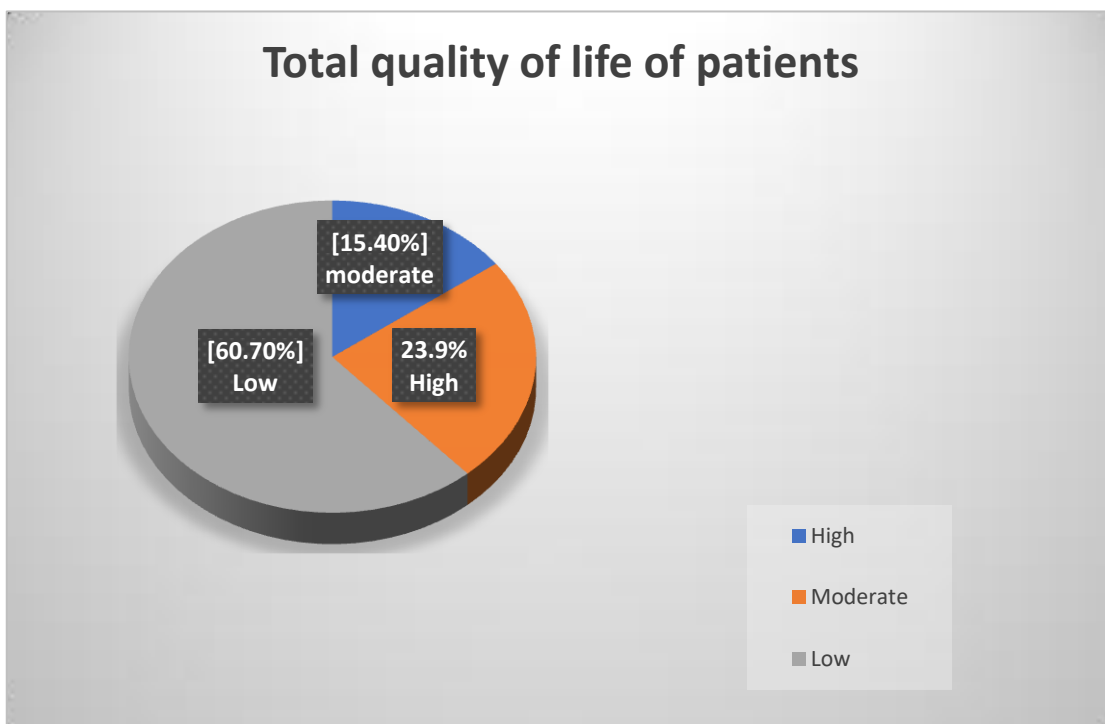


Figure (3): Frequency Distribution of the Studied Sample According to their Total Quality of life. (N=362)

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Table (4): Relation between Demographic Characteristics of the Studied Sample and their Total knowledge About Typhoid and paratyphoid fever disease. (N=362)

Items		Total Knowledge				X2	P-Value
		satisfactory		unsatisfactory			
		N	%	N	%		
Sex	Male	72	19.9	140	38.7	4.03	0.45
	Female	21	5.8	129	35.6		
Age	<20 years	2	.6	60	16.6	6.53	0.04*
	20-29 years	11	3	84	23.2		
	30-40 years	17	4.7	105	29		
	>40 years	63	17.4	20	5.5		
Social status	Single	22	6	75	20.7	3.942	0.139
	Married	56	15.5	123	34		
	Divorced	6	1.7	46	12.7		
	Window	9	2.5	25	6.9		
Residence	Rural	10	2.8	256	70.7	7.85	.000**
	Urban	83	22.9	13	3.6		
Crowding index	2-3	43	11.9	153	42.3	1.16	0.04*
	4-5	40	11	22	6.1		
	>5	10	2.8	94	25.9		
Educational level	Illiterate	4	1.1	101	27.9	17.15	.000**
	Reading & writing	11	3	125	34.5		
	Basic education	52	14.4	31	8.6		
	Higher education	26	7.2	12	3.3		
Occupation	Employee	76	21	22	6.1	12.62	0.02*
	Literal	4	1.1	138	38.1		
	Housewife	5	1.4	105	29		
	Student	8	2.2	4	1.1		
Income	Safe & efficient	38	10.5	8	2.2	13.92	0.03*
	Safe & not efficient	32	8.8	120	33.1		
	Un Safe & not efficient	23	6.4	141	39		

*significant**highly significant at $p < 0.05$.

Table (5): Relation between Socio-demographic Characteristics of the Studied Sample and their Total Quality of Life. (N=362)

Items		Total quality of life						X2	P-Value
		High		Moderate		Low			
		N	%	N	%	N	%		
Sex	Male	3	0.8	41	11.3	170	47	3.06	0.04*
	Female	49	13.8	53	14.7	46	12.4		
Age	<20 years	2	0.6	14	3.8	46	12.7	6.53	0.09
	20-29 years	6	1.7	26	7.2	63	17.4		
	30-40 years	9	2.5	34	9.4	79	21.8		
	>40 years	35	9.7	20	5.5	28	7.7		
Social status	Single	2	0.6	15	4.1	80	22.1	13.55	0.12
	Married	40	11	60	16.6	79	21.8		
	Divorced	6	1.7	11	3	35	9.7		
	Window	4	1.1	8	2.2	22	6.1		

Residence	Rural	5	1.4	55	15.2	206	56.9	18.23	.000**
	Urban	47	12.9	39	10.8	10	2.8		
Crowding index	2-3	9	2.5	43	11.9	144	39.8	9.063	0 .02*
	4-5	38	10.5	21	5.8	3	0.8		
	>5	5	1.4	30	8.3	69	19		
Educational level	Illiterate	3	0.8	23	6.4	79	21.8	5.12	0.03*
	Reading & writing	7	1.9	25	6.9	104	28.7		
	Basic education	22	6.1	35	9.7	26	7.2		
	Higher education	20	5.5	11	3	7	2		
Occupation	Employee	38	10.4	35	9.7	25	6.9	14.28	.000**
	Literal	2	0.6	40	11	100	27.6		
	Housewife	3	0.8	18	5	89	24.6		
	Student	9	2.5	1	0.3	2	0.2		
Income	Safe & efficient	36	9.9	8	2.2	2	0.6	16.35	0.04*
	Safe & not efficient	14	3.8	76	21	62	17.1		
	Un Safe & not efficient	2	0.6	10	2.8	152	42		

Table (6): Correlation between Knowledge, Dietary Habits and Quality of Life of Patients with Typhoid and Paratyphoid fever disease.

Variables	Dietary habits		Quality of life	
	Calculated R	P value	Calculated R	P value
Knowledge	0.586	.000**	.451	.000**
Dietary habits	-----	----	.171	.03*

4. DISCUSSION

Typhoid and paratyphoid fever are a systemic infection with the bacterium salmonella enteric serotype typhus. This highly adapted, human-specific pathogen has evolved remarkable mechanisms for persistence in host that help to ensure its survival and transmission, two diseases are similar, and are both called enteric fevers without treatment, about 1 in 5 people with typhoid and paratyphoid fever die.⁽¹¹⁾

Regarding socio demographic characteristics, the current study revealed that the half of the studied sample ages were ranged between 30 - 40 years, mean of age was 34.6 ± 9.7 years and near half of them were married, this result agreement with the result of study performed by **Khalil et al.**⁽¹²⁾ titled in " The global burden of typhoid and paratyphoid fevers at Malawi, Ghana and Kenya", who found that mean age of studied sample was 34.1±2 and 50% of them were married.

Concerning to level of education, occupation and monthly income, the current study revealed that more than third of the studied sample were read and write, had technical occupation and had un safe and not efficient income, this result disagrees with the result of study performed by **Kaljee et al.**⁽¹³⁾ titled in " Social and economic burden associated with typhoid fever in Kathmandu Nepal Country in South Asia and surrounding areas", who found that slightly more than 30% of the studied sample were higher education, employee and had safe and not efficient income. From the investigators opinion this result may be due to low educational level because most of people in this setting work in wide agriculture area in Elminya Governorate.

Related to total dietary habits and hygienic measures of studied sample, the current study revealed that more than half of them had poor in dietary habits and lack of hygienic measures, this finding is on the same line with what was reported by **Alba et al.**⁽¹⁴⁾ titled in "Risk factors of typhoid infection in the Indonesian archipelago", who stated that 50% of patients were poor in dietary habits and hygienic measures. From the investigators opinion this result may be due to poor dietary habits and hygienic measures in this area because Minya Governorate is considered one of the agricultural governorates with a large quantity of agricultural land on the side of drainage banks, which enhances the spread of the typhoid and Para typhoid fever on the other hand there are some poor villages that do not have health protection services that lead to exposures to typhoid and paratyphoid fever.

Concerning to research questions number one "Do the patients have knowledge about typhoid and Para typhoid fever disease?"

As regarding to the studied sample' total knowledge about typhoid and paratyphoid fever disease, the current study revealed that about three quarters of them had unsatisfactory level of knowledge about typhoid fever disease, this finding is on the same line with **Lendzele et al.**⁽¹⁵⁾ who titled in "typhoid, Malaria and Their Concurrent Infections in London, West Region of Cameroon", who mentioned that almost of studied patients had poor level of knowledge about typhoid and Malaria. On the other hand this study is disagreement with **Watson et al.**⁽¹⁶⁾ titled in "A cross-sectional seroepidemiological survey of typhoid fever in Fiji is an island country in Melanesia ", who stated that almost of studied patients had average level of knowledge about typhoid fever. From the investigators opinion low level of knowledge comes from poverty and economic burden.

Concerning to research questions number tow "Is there a relationship between the quality of life and typhoid and paratyphoid fever disease?"

As regarding to quality of life of the studied sample, the current study revealed that more than half of them had low level of quality of life, this finding is also found by **Prasad et al.**⁽¹⁷⁾ in study title "Epidemiology and risk factors for typhoid fever in Central Division, they mentioned that the majority of patients had low level of quality of life." On the other hand this study is in disagreement with **Limina et al.**⁽¹⁸⁾ who titled in "Frequency of infectious diseases in immigrants in a Western European country", who mentioned that the more than 60% of patients had moderate level of quality of life.

Regarding to the relations between socio demographic data of the studied sample and their total quality of life, the results of the current study indicated that there was highly statistically significant relation between total quality of life and residence and occupation. Moreover, there was statistically significant with their sex, crowding index, educational level and income. While, there was statistically insignificant relation between with age and social status, this finding is on the same line with **Watson**⁽¹⁶⁾ titled in "Seroepidemiological investigations of Salmonella enteric a serovar Typhoid infection and the potential role of vaccination in the control of typhoid fever in Fiji is an island country in Melanesia", who mentioned that there was highly statistically significant relation between total quality of life and residence and occupation. Moreover, there was statistically significant with their sex, educational level and income. While, there was statistically insignificant relation between age and social status.

According to correlation between total knowledge of the studied sample and their total dietary habits and quality of life, this current result illustrated positive correlation between total knowledge of them and their dietary habits and quality of life, this finding is on the same line with **Hurst**⁽²⁰⁾ in study title "Understanding and Estimating the Risk of Water borne Infectious Disease Associated with Drinking Water In The Connections between Ecology and Infectious Disease, Cincinnati, Ohio, USA", who mentioned that their positive correlation between total knowledge of patients and their dietary habits and quality of life.

Concerning to correlation between total quality of life of the studied sample and their dietary habits, this current result illustrated positive correlation between total quality of life for them and their dietary habits this finding is on the same line with **Isa et al.**⁽²¹⁾ who titled in "Review on the Control of Waterborne Diseases" who found that their positive correlation between total quality of life of patients and their dietary habits. On the other hand this study is in disagreement with **Watson et al.**⁽¹⁶⁾ titled in "A cross-sectional seroepidemiological survey of typhoid fever in Fiji is an island country in Melanesia ", who stated that there was negative correlation between total quality of life of patients and their dietary habits. From the investigator opinion low standard of life and poverty that lead to low level of healthy food and long time in privet working lead to eating fast food out of home .

5. CONCLUSION

Based on the study findings of the present study, the investigator concludes that: The most of study sample had low quality of life as had poor in dietary habits and poor hygienic measures which lead them to exposure to typhoid and paratyphoid fever, the majority of them had unsatisfactory level of knowledge about typhoid and paratyphoid fever disease. Results revealed that there was positive correlation between total knowledge of the studied sample regarding to typhoid and paratyphoid fever disease and their dietary habits. Moreover, there was positive correlation between total knowledge of the studied sample and their quality of life.

6. RECOMMENDATIONS

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

- 1- Developing health educational programs that would help patients to improve their quality of life and general health condition.
- 2- Developing and disseminating medical posters or pamphlets to raise health awareness among patients about typhoid and paratyphoid fever.
- 3- Replication of the study on a larger probability sample from different geographical areas in Egypt to obtain more generalizable data.

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