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The Awareness of Diseases Caused by Parasites, Methods of Prevention, and their Relationship to the Educational Level

Salwa Muftah Eljamay[1*], Marwa A. Ramadan Bumaluma [2], Fatma Muftah Eljamay[3]

[1] College of Medical Technology, Public Health Department, Derna, Libya

[2,3] College of Medical Technology, Lab Medicine Department, Derna, Libya

[*]*Corresponding author: salwaeljamay@cmtd.edu.ly*

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Abstract:

Parasitic infections are the most prevalent diseases in the world, predominantly in developing countries. This study aimed to learn about Libyans' awareness of parasites and their prevention, as well as the relationship between educational level and awareness. Material and Methods: A cross-sectional questionnaire survey was conducted A set of 11 questions, including questions on knowledge and awareness of the mode of transmission of vector-borne diseases among the general population. The questions were uploaded to Google Forms. Results: the Frequency and percentage of the independent variables showed that females were 225 (83.3%), Males 51 (16.7%), ages between 15 and 65, The highest level of education for university graduates is 173 (56.5%), and the lowest percentage of students in high school is 6 (2.0%), As for the job, it was higher for 93 (30.4 %), and the number and proportions of answers to questions about parasite awareness and the resulting diseases and ways of preventing them, where the highest percentage is Yes, in Libya's daily practices of buying vegetables and drinking water, the highest percentage was for drinking mineral water (171) (55.9%), the source of vegetables was Greenery Market (165) (53.9%), and the highest percentage was for those who were not infected (183) (59.8%), followed by intestinal infection (63) (20.6%), skin infection (59) (19.3%), and sexual infection (0.3). There is a strong relationship between the Education Level and knowledge p-value (0.002 < 0.005), X2 (105.463), and R (0.178**), but there is no relationship between the education level behavior p-value (0.741 > 0.005), R (0.019), and X2 (32.670). Conclusion: There is a strong correlation between the level of education and the extent to which Libyan citizens are educated about parasite-borne diseases, methods of infection, and methods of prevention.

Keywords: Parasitic Infections, Diseases, Prevention, Population, Libya

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الوعي بالأمراض التي تسببها الطفيليات وطرق الوقاية منها وعلاقتها بالمستوى التعليمي

سلوى مفتاح الجامعي [1*]، مروة رمضان بومعلومة [2]، فاطمة مفتاح الجامعي [3]
[1]قسم الصحة العامة، كلية التقنية الطبية، درنة، ليبيا
[2،3] قسم طب المختبرات، كلية التقنية الطبية، درنة، ليبيا

الملخص
تعد العدوى الطفيلية من أكثر الأمراض انتشارا في العالم، وأغلبها في الدول النامية، وتهدف إلى معرفة وعي الليبيين بالطفيليات والوقاية منها والعلاقة بين المستوى التعليمي والوعي. الطرق والمواد: تم إجراء مسح استبياني مقطعي لمجموعة من 11 سؤالا بما في ذلك أسئلة حول المعرفة والوعي بطريقة انتقال الأمراض المنقولة بالنواقل بين عامة السكان. تم تحميل الأسئلة في أشكال جوجل. النتائج: تواتر ونسبة مئوية من المتغيرات المستقلة ، أن الإناث 225(83.3٪) ، والذكور 51(16.7٪) ، والأعمار بين 15 و 65 عاما ، وأعلى مستوى تعليمي لخريجي الجامعات ، و 173(56.5٪) ، وأدنى نسبة من الطلاب في الثانوية العامة 6(2.0٪) ، أما بالنسبة للوظيفة ، فقد كانت أعلى بالنسبة لـ 93(30.4) ، وعدد ونسب الإجابات على الأسئلة حول الوعي بالطفيليات والأمراض الناتجة وطرق الوقاية منها ، حيث كانت أعلى نسبة هي نعم ، ممارسات ليبيا اليومية في شراء الخضروات ومياه الشرب، أعلى نسبة كانت لشرب المياه المعدنية 171(55.9%)، مصدر الخضار هو سوق الخضر 165(53.9%)، في أعلى نسبة كانت لأولئك الذين لم يصابوا 183(59.8%)، تليها العدوى المعوية 63(20.6%)، عدوى الجلد 59(19.3%) والعدوى الجنسية 1(0.3)، هناك علاقة قوية بين مستوى التعليم والمعرفة حيث كانت ال P-value (0.005 > 0.002)، X^2 (105.463) ، R (0.178**) ، انه ليس هناك علاقة بين سلوكيات مستوى التعليم ال P-value (0.005 < 0.741) ، R (0.019) ، X^2 (32.670)، الخلاصة: : توجد علاقة ارتباط قوية بين مستوى التعليم ومدى معرفة و اهتمام المواطنين الليبيين بالأمراض التي تنقلها الطفيليات وطرق العدوى وطرق الوقاية.

الكلمات المفتاحية: الالتهابات الطفيلية، الأمراض، الوقاية، السكان، ليبيا

Introduction

Parasitic infections are a major public health concern in developing countries. Displacement of people due to conflicts and wars, international travel, and shifting patterns of immigration has increased the importance of raising awareness of these infections. The WHO estimated the global burden of parasitic infections at approx. [1]. Models of contagion are used to study the transmission dynamics of a pathogen or information being transmitted through a structured population. Most of these are defined as compartmental models mathematically distinguishes individuals based on their state; i.e., whether they are susceptible to a contagion or infectious with that contagion. [2], -is deadly disease is the root cause of the death of four-hundred-five thousand people according to the World Health Organization (WHO) 2019 world malaria report [3], Parasites are eukaryotic organisms that can spread a variety of human diseases. Intestinal parasite infections (IPIs) are one of the primary public health problems, as they are the leading cause of illness, morbidity, and mortality in certain developing and wealthy nations. It is estimated that around 3.5 billion people globally are afflicted [4], Vector borne diseases account for more than 17% of other contagious diseases and can be caused either by parasites, bacteria or viruses. Malaria is a parasitic infection caused by female Anopheles mosquitoes[5], According to the World Health Organization, 24% of the world population are likely to be infected with soil-transmitted helminths, whereas over three billion are infected with intestinal parasites but have no clinical symptoms[6], On the other hand, one of the disadvantages of dogs' domestication is the possibility of transmission of zoonotic parasites, especially helminths. The most common zoonotic helminths of dogs are Strongyloides stercoralis, Ancylostoma caninum, Dipylidium caninum, Toxocara canis, and Echinococcus granulosus, which means they can be infectious for humans and cause a variety of diseases like hydatidosis, visceral larva migrans, and cutaneous larva migrans [7], According to various studies, the high occurrence of intestinal parasites is mostly due to a lack of personal and environmental hygiene, a lack of safe water supply, human behaviours, poverty, ignorance of health promotion approaches, and inadequate health facilities[8], Intestinal parasites are transmitted through infected objects such as food, drink, dirt, and even a person's finger[9]. Preschool children entirely depend upon their mothers who are the primary care giver in the family and have significant effect on the health of their children; therefore, it is essentially for the mothers to have the awareness of detection and prevention of IPI to protect the health of their children[10]. A high index of suspicion for parasitic diseases, especially in endemic areas, should be maintained in patients presenting with neuropsychiatric symptoms.

A multidimensional approach to the identification of the offending parasite using serological, radiological, and molecular tests is required not only to ensure proper and prompt treatment of the primary parasitic infection but also to improve the prognosis of patients through the complete resolution of neuropsychiatric symptoms.[11]. Low knowledge regarding the disease risk factors, transmission, prevention, and control is the primary factor contributing to the disease's persistence in numerous pig-raising communities. Poor knowledge encourages the community to adopt practices that perpetuate the parasite life cycle[12]. the zoonotic nature of D. immitis and D. repens, there is need for awareness and knowledge about them among both medical doctors and veterinarians in countries, such as Finland, where they are imported to, spreading, and establishing.[13], Education had a significantly positive association with farmers' knowledge, attitudes, and best practice scores, while knowledge was significantly associated with both attitudes and practices.[14], three main factors form the classic epidemiological triad of the diseases necessary for the infection to occur. They are host health, parasitic condition, and the environment[15], Parasites can be classified into three categories: protozoa, helminths, and arthropods. Protozoa are unicellular eukaryotes that have complex internal structures and metabolic activities. They have the ability to multiply inside the human host and some can live freely in the environment. Common protozoa include: amoeba, flagellates, ciliates, and sporozoa. The life cycle of some protozoans includes a cyst stage and trophozoite stage. Cysts are the protective and inactive forms of the parasite that can survive harsh conditions in the environment such as temperature, pH, and lack of nutrients[16], A human health literacy indicator system for prevention of parasitic diseases is preliminarily constructed, which provides insights into the development of health literacy evaluation tools for prevention of parasitic diseases in the new era. Reset[17], Zoonoses originate from animals and spread to people, which is factually a spillover[18], The other potential zoonotic pathogenic parasite that may results with the disease is Trichinella spp. The hydatosis by Echinococcus[19], Three factors that separate the developing world from the developed world are access to safe drinking water, sanitation, and nutrition[20].

Material and methods

Data Collection: A cross sectional questionnaire survey was conducted among A set of 11 questions includes questions on knowledge and awareness on the mode of transmission of vector borne diseases among the general population. The questions were uploaded in google forms. The people of age group between 20- more than 65 years attended the survey. There were 306 responses to the survey. Convenient sampling technique was used for data collection. The independent variables were the age, gender, etc.

While the dependent variables were the knowledge and awareness parasitic diseases. Association between variables was tested using chi-square test between the variables Any P value less than 0.05 was considered statistically significant.[5].

Sample Size:

The duration of the study was about 7 days, were answer the questions of questionnaire.

Statistical Analysis: The distribution of categorical variables was compared with the frequency and percent test, and quantitative variables with correlation (R) test. Statistical significance was set at $p < 0.05$. And Qui Squair X2, the statistical analyses were performed with the Statistical Package for the Social Sciences software, release 26.0 for Windows.[21].

Results and discussion

Table 1 shows the Frequency and Percent % of the independent variables, that the Female 225(83.3%), Males 51(16.7%), ages between 15 and 65, The highest level of education for university graduates, 173(56.5%), and the lowest percentage of students in high school 6(2.0%), As for the job, it was higher for 93(30.4).

Table 1 Frequency and Percent % of the independent variables

The independent variables	N (%)
Gender	
Male	51(16.7)
Female	255 (83.3)
Age	
15 - 20 Years	36(11.80)
21 - 25 Years	100(32.7)
26 - 30 Years	20(6.5)
31 - 35 Years	26(8.5)
36 - 40 Years	37(12.1)
41 - 45 Years	30(9.8)
46 - 50 Years	24(7.8)
51 - 55 Years	21(6.9)
56 - 60 Years	8(2.6)
61 - 65 Years	3(1.0)
More than 65	1(0.3)
Jobs	
Higher Education	93(30.4)
Education	69(22.5)
Ministry of Health	79(25.8)
Freelancing Business	30(9.8)
Housewife	32(10.5)
Environmental Agency	2(0.7)
Public Transport	1(0.3)
Education Level	
Postgraduate	81(26.5)
University	173(56.5)
High Institute	12(3.9)
High School	6(2.0)
Junior High	9(2.9)
Others	18(5.9)
Intermediate Institute	7(2.3)
Total	**306**

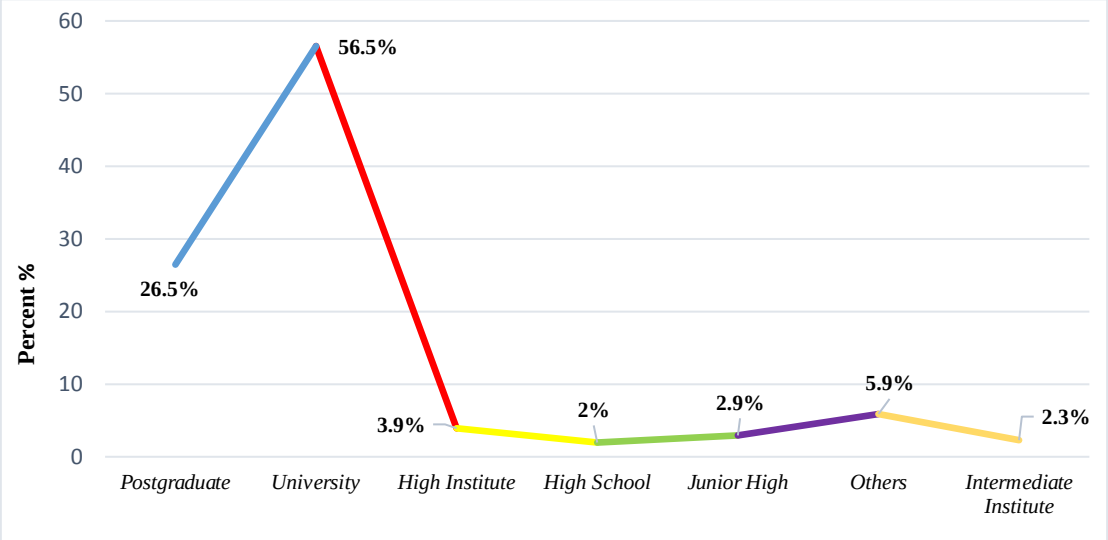

Figure 1 the percent of Education Levels

Table 2 illustrated the number and proportions of answers to questions about parasite awareness and the resulting diseases and ways of preventing them, where the highest percentage is yes

Table 2 the frequency and percentage of answers to questions about parasite awareness and the resulting diseases

Question of Awareness	Answer	
	Yes N (%)	**No N (%)**
Do you have knowledge about parasites that infect humans?	243(79.4)	63(20.6)
Did you know that parasites cause diseases?	294(96.1)	12(3.9)
Do you know the diseases caused by parasites?	201(65.7)	105(34.3)
Do you know how to get a parasitic infection?	198(64.7)	108(35.3)
Do you know the methods of parasitic infection?	207(67.6)	99(32.4)
Do you know the type of parasites?	194(63.4)	112(36.6)
Do you know that lice are parasites?	187(61.1)	119(38.9)
Do you know how to prevent and control the parasite infection?	180(58.8)	126(41.2)

Table 3, shows Libya's daily practices in buying vegetables and drinking water, in figure 4 shows that the highest percentage was for drinking mineral water 171(55.9%), in figure 2 show that`s the source of vegetables is Greenery market 165(53.9%), in figure 3 shows that the highest percentage was for those who were not infected 183(59.8%), followed by Intestinal Infection 63(20.6%), Skin Infection 59(19.3%) and Sexual Infection 1(0.3)

Table 3 Libya's daily practices and how infected with parasites, and the kind of parasites

Daily Practices	**N (%)**
the source of drinking water	
Mineral water	171(55.9)
The Main Source	36(11.8)
Well	75(24.5)
Buy by water car	24(7.8)
The source of vegetables	
Greenery market	165(53.9)
Grocery Shop	40(13.1)
Supermarket	101(33.0)
How infected with parasites, and the kind of parasites	
No infection Occurred	183(59.8)
Intestinal Infection	63(20.6)
Skin Infection	59(19.3)
Sexual Infection	1(0.3)
Total	**306(100.0)**

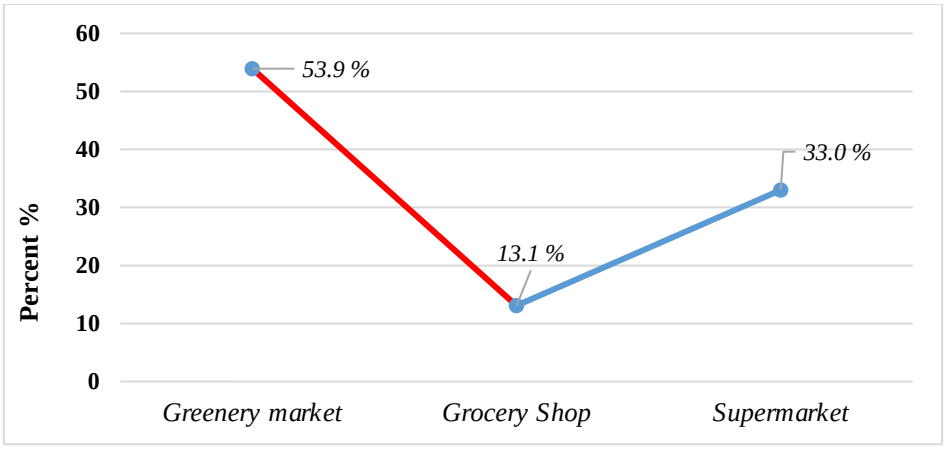

Figure 2 the percent of the source of vegetables

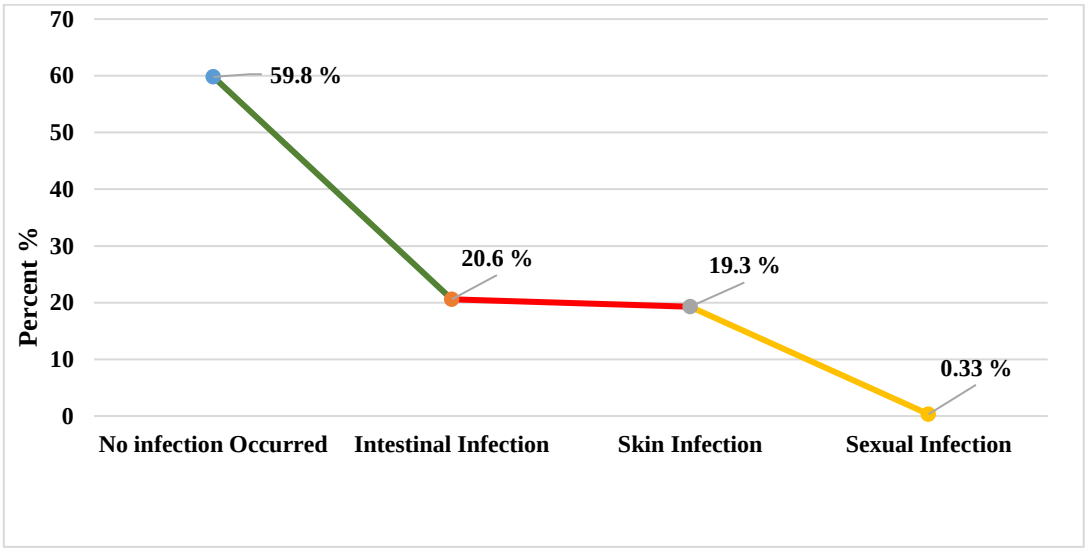

Figure 3 the percent of infected with parasites, and the kind of parasites

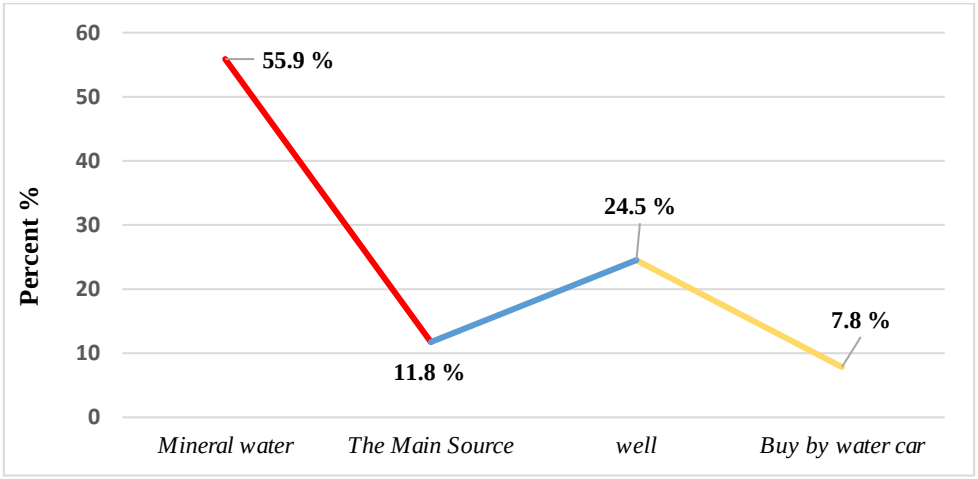

Figure 4 the percent of source of drinking water

Table 4 illustrated that there is strong relationship between the Education Level and knowledge p-value (0.002 < 0.005), X^2 (105.463), R (0.178**), and there is not relationship between Education Level Behaviours p-value (0.741 > 0.005), R (0.019), X2(32.670)

Table 4 relationship between the Education Level and Behaviours

Correlations		**Education Level**	**Pearson Chi-Square(x^2)**	**P-Value**
Awareness	R	**0.178****		
	P-Value	**0.002**	**105.463**	**0.000**
Behaviours	R	0.019		
	P-Value	0.741	32.670a	0.337
Total	N	306		
**. Correlation is significant at the 0.01 level (p-value).				

Discussion

The main aim of the current study was to evaluate the awareness and practice of preventive behaviors toward parasitic infection among Libyan citizens, In Table 1 shows the Frequency and Percent % of the independent variables, that the Female 225(83.3%), Males 51(16.7%), ages between 15 and 65, The highest level of education for university graduates, 173(56.5%), and the lowest percentage of students in high school 6(2.0%), As for the job, it was higher for 93(30.4). Table 2 illustrated the number and proportions of answers to questions about parasite awareness and the resulting diseases and ways of preventing them, where the highest percentage is yes, in Table 3, shows Libya's daily practices in buying vegetables and drinking water. In figure 4 shows that the highest percentage was for drinking mineral water 171(55.9%), in figure 2 show that`s the source of vegetables is Greenery market 165(53.9%), in figure 3 shows that the highest percentage was for those who were not infected 183(59.8%), followed by Intestinal Infection 63(20.6%), Skin Infection 59(19.3%) and Sexual Infection 1(0.3), Table 4 illustrated that there are strong relationship between the Education Level and knowledge p-value (0.002 < 0.005), X2 (105.463), R (0.178**), and there are not relationship between Education Level Behaviours p-value (0.741 > 0.005), R (0.019), X2(32.670). From the data collected, the study proves that there is a strong correlation between the level of education and the extent to which Libyan citizens are about parasite-borne diseases, methods of infection and methods of prevention, and that most previous studies are consistent with this study where they as showed [10], and agree with [5], [4], [13], [14], [15], [18], [19], and [20].

Conclusion

From the data collected, the study proves that there is a strong correlation between the level of education and the extent to which Libyan citizens are about parasite-borne diseases, methods of infection and methods of prevention,

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