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Research Article

Knowledge and Preventive Practices of Rural Residents against Schistosomiasis in an Endemic Community in Eastern Philippines

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Abstract

Background: Schistosomiasis is one of the most widespread parasitic infections in the world. Although there were several studies about the effect of health education against schistosomiasis, no empirical data was established concerning to its knowledge and preventive practices of rural residents in this disease among its rural residents.

Aim: To assess the health knowledge and preventive practices of rural residents against schistosomiasis in an endemic rural community in Eastern Philippines.

Design: A Cross-sectional study was conducted to 140 conveniently selected rural residents.

Methods: The data was gathered through the use of standardized questionnaire developed by HD Mazigo et al. The researchers utilized random sampling technique in the endemic schistosomiasis community.

Results: Knowledge of the respondents towards schistosomiasis was associated with their age and income. Preventive practices towards schistosomiasis have significant relationships with toilet facility.

Conclusion: There was still lack of understanding concerning transmission schistosomiasis. Consequently, modifying their knowledge and behavioral practices related to schistosomiasis transmission is highly recommended.

Keywords: Knowledge; Parasitic infections; Preventive practices; Rural residents; Schistosomiasis; Toilet facility

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Introduction

Schistosomiasis is one of the most widespread parasitic infections and has a high prevalence in tropical countries [1].This infection describes as an ignored tropical infection [1]. Furthermore, this infectious disease is common in Africa, South America and Asia [2]. Meanwhile, in Asia such as in the Philippines, there were 560,000 known reported cases [3].

The occurrence of this disease in the country is still very high. There were 10 among the 16 regions have reported cases of clinical schistosomiasis, with 6.7 million people living in the endemic areas [4-6]. In addition, within these endemic areas, millions of people were exposed, risk for infection through their daily lifestyle and contact with water including farming, fishing, domestic activities (bathing and washing) and recreation [4-6].

In Samar, a high incidence of this disease was reported [4,5]. Although there was mass treatment in the province, increase household access to toilet and safe water facilities, conduct sentinel surveillance through stool examination, still, the prevalence rate was very high [7]. In order to halt transmission of the parasite in such community, treatment regimen, as well as other control programs such as community awareness, is necessary [8]. Health education is effective means to prevent schistosomiasis with particular emphasis on the factors influencing such beliefs and practices [8]. Previous studies regarding knowledge, attitudes and practices in schistosomiasis that explained a crucial need for focusing health messages among endemic communities [9], but no empirical studies were conducted especially in endemic schistosomiasis communities in Samar. This demonstrates that schistosomiasis remains a major public health problem in the province. Thus, the researcher was motivated to conduct this investigation.

Finally, this study would help the farmers, Local Government Units and Healthcare providers to strengthen health programs and redirect policies regarding prevention of schistosomiasis. This also enlightens them that knowledge is not only a man's factor to treat this disease but also their practices. The study aims to provide depth assessment on the rural residents against schistosomiasis in an endemic community in Eastern Philippines.

Methodology

Design

A descriptive cross-sectional design was used in the study in assessing the knowledge and preventive practices of rural residents against schistosomiasis in an endemic rural community in the Philippines.

Participants

There were 162 households living in Endemic Schistosomiasis community. Thus, a total enumeration was applied in recruiting all the respondents. They were interviewed from their own houses based on the reported cases of Schistosomiasis in Gandara, Samar. For the purpose of the survey, a household was defined as a group of people who routinely live and eat together in one house. One person per selected household was interviewed. The target individual for interviews was the person best placed to answer questions about the household's health as nominated by the acting household head. Only household members over 18 years of age were eligible. The researchers make at least two additional attempts to interview an eligible household member at different times of the day. Households that could not be located, those where no eligible respondent was encountered despite at least three visits to the household and those where consent to be interviewed was not given were dropped from the sample without replacement.

Each respondent was given enough time to answer each question. The researchers discussed that the answers remain confidential; the whole research instruments were accomplished according to the purpose of this study. However, None of this respondents were infected of the disease.

Settings

Gandara, Samar province has one of the highest prevalence rate of *S. japonicum* in Samar province, based on both the presence of fecal eggs and the quantification of *S. japonicum* DNA in fecal samples [6,10]. The most common schistosome species in the region is *S. japonicum* [11]. Specifically, this study was undertaken in three villages namely; San Miguel, Diaz and Hinugacuan, which all were located in Gandara, Samar Province, Eastern Philippines. In the study, the village is the smallest organizational unit in a region, which is also referred to as a production group or natural village. These three villages mentioned were among the highest prevalence rate of schistosomiasis in Gandara, Samar [6]. Although there was mass treatment in the province, increase household access to toilet and safe water facilities, and conduct sentinel surveillance through stool examination, still, the prevalence rate was very high [7].

Ethical consideration

Ethical clearance was acquired from the nursing faculty of Samar State University. All respondents received a written informed consent form prior to the interview. Involvement and participation in the study were voluntary; anonymity and confidentiality were guaranteed using only code number in the questionnaire.

Instrument

The main source of data was gathered based on the adapted questionnaire [12]. Since the questionnaire was developed in Africa, this was subsequently translated into Tagalog. Its validity was assessed by a group of native Filipino language experts in the field. Pre-testing was employed in determining consistency and suitability of language using households different from the ones who participated in an interval of one day. The test-retest reliability coefficient was 0.80 [12].

The questionnaire has three parts. Part 1: Discussed the demographic profile such as name (using only code numbers), age, sex, educational attainment, occupation and monthly family income. Part 2: Assessed the knowledge in schistosomiasis with 5 subscales. The scale of yes or no response options used in assessing the knowledge. Part 3: Discussed the 10 item preventive practices against schistosomiasis with five choices per item ranging from 1(not practice at all) to 5(extremely practice).

Data Collection

The researchers approached the village head and asked permission to conduct the study. This was done before the interview to the eligible household. The interviews were conducted in the participants' houses and ran within two weeks (January 2014).

Data analysis

In presenting the socio-demographic profile, name (optional), age, sex, educational attainment, occupation and the respondents' monthly family income, frequency counts, percentage, mean and standard deviation were used. Associations were explored between knowledge and preventive practices and different socio-demographic profile of respondents (sex, age group, education level and district), with a statistical significance of the association tested using p-values less than 0.05 were considered statistically significant.

Results

This study interviewed a total of 162 households; however, 22 were omitted from the analysis because the interviewee was less than 18 years of age. Thus, only 140 households were included in the analysis. In this case, the response rate was 86.49 %.

As shown in table 1, 140 respondents participated in the study which composed of 57 (40.71) male and 83 (59.29) female. More than half of the respondents were married, Roman Catholic, have toilet facilities, with monthly income Php 1,000-5,000, but only a few of them were college graduates.

Knowledge about schistosomiasis. Table 2 presents the multiple responses concerning the knowledge of respondents about schistosomiasis. More than half of the respondents (both male and female) indicated that worms, dirty water, swimming in lakes and drinking dirty water cause schistosomiasis. The symptoms to which respondents reported were varied considerably and usually not associated with schistosomiasis were also reported (Table 2).

About 121 or 86.9 percent from the male respondents responded swimming in dirty water can transmit the disease. However, there were some of the respondents in male and female answered sexual intercourse and mosquitoes which are not considered a mode of transmission. Meanwhile, more than half from the male respondents responded that they could acquire the disease through a lake, rivers, rice field, water collection areas and toilet. Meanwhile, more than half of the female respondents answered that they could acquire the disease through toilet facility. Finally, a significant number of respondents are knowledgeable about preventive and control measures.

Respondent's preventive practices on schistosomiasis. Table 3 shows the respondents' preventive practices on schistosomiasis. Results showed that respondents had attained relatively scores on these preventive practices.

The regression model knowledge towards schistosomiasis, as described in the table 4, the coefficient determination table of the regression model is 0.474 which indicates that about 47.4 percent of the

variation of knowledge explained by age and income. This means a weak prediction of the independent variable to dependent variables. To fully disclose the knowledge of the participants, 52.6 percent of the variation of knowledge explained by other factors. Furthermore, for every 1 point unit increase of age level, there is a corresponding 0.214 unit increase in knowledge. It has a p-value of 0.000, which is lesser than the significant level of 0.05. Next, for every one unit increase in income, there is a corresponding 0.142 increase in knowledge. It has a p-value of 0.000, which is lesser than the significant level of 0.05.

Age Group	Male (%)	Female (%)	Total
20 - 26	9(6.43)	14(10)	23
27 - 33	11(7.86)	18(12.86)	29
34 - 40	10(7.14)	6(4.29)	16
41 - 47	12(8.57)	13(9.29)	25
58 - 54	6(4.29)	8(5.71)	14
55 - 61	4(2.86)	13(9.29)	17
62 – 68	3(2.14)	6(4.29)	9
69 – 75	2(1.43)	5(3.57)	7
Mean	43.12	49.74	
SD	2.37	3.61	
Civil status			
Single	16(11.43)	13(9.29)	29
Married	32(22.86)	56(40)	88
Widowed	9(6.43)	14(10)	23
Educational Background			
Elementary Graduate	11(20.75)	15(10.71)	26
High School Level	14(26.42)	24(17.14)	38
High School Graduate	21(39.62)	21(15)	42
College Level	7(13.21)	14(10)	21
College Graduate	4(7.55)	9(6.43)	13
Religion/Denomination			
Roman catholic	46(7.55)	(52.86)74	120
Born again	11(19.30)	(6.43)9	20
Occupation			
Fisherman	11(19.30)		11
Farmer	46(80.70)	9(6.43)	55
Housewife	-	74(52.86)	74
Income			
Php 1,000-5,000	29(20.71)	54(38.57)	83
Php 6,000 -10,000	13(9.29)	18(12.86)	31
Php 11,000 - 15,000	10(7.14)	12(8.57)	22
Php 16,000 - 20,000	3(2.14)	1(0.71)	4
Toilet facility			
With toilet facility	50(87.72)	63 (75.90)	113
Without toilet facility	7(12.28)	20 (24.10)	27

Table 1: Demographic profile of the respondents.

The regression model preventive practices, as described in the table 5, the coefficient determination table of the regression model is 0.367 which indicates that about 36.7 percent of the variation of preventive practices explained by age. This indicates a weak prediction of the independent variable to dependent variables. To fully disclose the preventive practices of the participants, 63.3 percent of the variation of preventive practices explained by other factors. Furthermore, for every 1 point unit increase of age level, there is a corresponding 0.258 unit increase of preventive practices. It has a p-value of 0.000, which is lesser than the significant level of 0.05.

Knowledge on Schistosomiasis	Male		Female	
	Yes	(%)	Yes	(%)
Knowledge on the cause of schistosomiasis				
Worms	71	50.7	69	49.3
Dirty water	123	87.9	17	12.1
Swimming in lakes causes schistosomiasis	116	82.9	24	17.1
Drinking dirty water causes schistosomiasis	108	77.1	32	22.9
Knowledge about the symptoms of schistosomiasis				
Abdominal pain	106	75.7	24	24.2
Haematuria	63	45.0	77	65.0
Pain during micturation	31	22.1	109	77.9
Swelling of the abdomen	105	75.0	35	25.0
Knowledge about the transmission of schistosomiasis				
Swimming in dirty water	121	86.9	29	13.1
Air	96	68.6	44	32.4
Sexual intercourse	24	17.14	32	22.86
Urinating in water	70	50.0	70	50.0
defecating in water	90	64.3	50	35.7
Stepping over human feces	102	72.9	38	27.1
Snails	93	66.4	47	33.6
Mosquitoes	39	27.86	27	19.29
Knowledge about areas one can get infected with schistosomiasis				
Lakes	122	87.1	28	12.9
Rivers	101	72.1	39	27.9
Rice fields	103	73.6	47	26.4
Open air	112	80.0	28	20.0
water collection areas	92	65.7	38	34.3
Toilets	59	42.9	81	57.1
Knowledge about preventive and control measures of schistosomiasis				
Avoiding swimming in lakes	113	80.7	27	19.3
Avoiding urinating in lakes	109	77.9	31	22.1
Avoiding defecating in lakes	114	81.4	26	18.6
Use of toilets when defecating	107	76.4	33	24.4
Wearing of slippers	103	73.6	37	24.7
Wearing of boots	113	80.7	27	19.3
Wearing of gloves	99	70.7	41	29.3
Avoiding the use of water from river	107	76.4	33	24.6
Hand washing	114	81.4	26	18.6
Boiling water before drinking	113	80.7	27	19.3

Table 2: Knowledge on schistosomiasis.

Discussion

Schistosomiasis preventive control in the Philippines can only be achieved if the households have sound knowledge and correct preventive practices. Based on the findings, respondents were knowledgeable in schistosomiasis. Specifically, the results on the knowledge of the causes and symptoms of schistosomiasis are similar to previous studies in which more than half of the respondents were knowledgeable [13]. A recent study described that people learned the cause and

symptoms because they heard using the local most common term [14]. However, this is only limited to the local term of disease and not the cause and symptoms. Thus, a further qualitative research could be explored using local term cause and symptoms and prevention. Approximately 17% of the respondents reported that sexual intercourse could transmit the disease misconceptions relating to sexual contact is consistent with the previous study in Africa [14]. These findings represent a large of the discrepancy of correct information. Incorrect information leads to wrong actions which place the entire community at risk [15,16]. Overall, these findings affirm to the previous studies in Brazil and Kenya in which schistosomiasis is endemic in these countries. In contrary, poor knowledge about schistosomiasis were found in Malawi, Western Kenya and Senegal [17-20]. Misconceptions were also widespread in developing countries [20]. This implies that common misconception needs to be improved through a health promotion education campaign. Respondents have very low preventive practices. This is in line with the recent study in Nigeria and Mozambique [21,14].

	Male		Female	
	Means	Standard Deviation	Means	Standard Deviation
Avoids swimming in rivers	2.94	0.97	3.04	1. 13
Avoids urinating in rivers	3.01	1.08	3.12	1.19
Avoids defecating in rivers	3.49	1.15	3.33	0.94
Uses toilet when defecating	2.90	0.86	3.08	1.02
Wearing slippers	4.41	1.49	4.55	1.26
Wear boots in the rice fields	2.96	0.78	2.47	0.83
Wear gloves in the rice fields	2.26	0.47	2.26	0.47
Avoids use of water from river when washing clothes	2.66	0.77	2.66	0.77
Wash hands and feet after contact with dirty water	3.64	1.11	3.64	1.11
Boils water before drinking it	2.60	0.86	2.60	0.86

Table 3: Respondents preventive practices on schistosomiasis.

Variable	R	R^2	Adjusted R^2	Std. Error of the Estimate
	0.641(a)	0.474	0.469	0.575
	Unstandardized Coefficients			
	β	Std. Error	T-Value	P-Value
(Constant)	-0.693	0.699	-0.864	0.375
Age	0.214	0.163	3.664**	0.000**
Gender	0.011	0.014	0.643ns	0.541
Civil status	0.137	0.743	0.855 ns	0.685
Educational Background	0.186	0.314	0.643ns	0.753
Religion	0.179	0.688	0.856ns	0.585
Occupation	0.035	0.305	0.756ns	0.854
Income	0.024	0.190	2.764**	0.000**
Toilet Facility	0.142	0.854	0.535ns	0.256

Table 4: Regression model knowledge towards scistosomiasis.

Dependent variable: Knowledge.

Variable	R	R^2	Adjusted R^2	Std. Error of the Estimate
	0.441(a)	0.367	0.334	0.586
	Unstandardized Coefficients			
	β	Std. Error	T-Value	P-Value
(Constant)	-0.330	0.175	-0.168	-2.156
Age	0.258	1.022	-0.081**	-0.000
Gender	0.096	0.807	0.011	0.113
Civil status	0.391	0.683	-0.853 ns	0.685
Educational Background	0.961	0.183	0.172ns	0.284
Religion	0.179	0.688	0.128ns	0.462
Occupation	0.035	0.305	0.738ns	-0.194
Income	0.035	0.192	0.346	0.196
Toilet Facility	0.944	0.163	0.363ns	0.743

Table 5: Regression model preventive practices.

Dependent variable: preventive practices.

Note: ** Significant at p<0.01 (2 tailed).

Emphasizing the preventive practices is vital against schistosomiasis. However, most of the studies were conducted in small villages. Thus, further research is needed to explore the relationships between the knowledge and preventive practices on schistosomiasis in a wider region. Another highlight of the study is the age and income which have significant relationships with the knowledge and preventive practices on schistosomiasis [14,22]. This is worth noting since the previous study pointed out that age, was the most important factor significantly associated with the knowledge and preventive practices on schistosomiasis, but not the income level [21]. However, the previous study discussed that age was generally found not to be statistically significant [14]. Thus, more empirical data is needed to determine the significance of age to knowledge and preventive practices. Other findings of the study revealed that income has significant relationships in knowledge towards schistosomiasis. These results showed that the family income of the respondents was below the poverty monthly per capita income of Php 8,378 per month [23]. Poverty increases the chance of getting infected with this disease. Previous studies also described that lack of money was cited as reasons for failure to visit a hospital/health center. Nevertheless, this suggests that people with higher economic status could have better access to information combined with the effect of generalized education. This could assure a better understanding and comprehension of information. Thus, further research could be developed in determining the effect of poverty in schistosomiasis endemic community.

Limitations

This study was conducted during 2014, at a particular point in time (one day only) which could limit the generalizability of the result. Moreover, the study is confined only to three villages in Gandara, Samar Philippines. The researchers depend on a self-administered questionnaire, which is vulnerable to bias recall. This study also used convenience sampling that gives inability in generalizing the results. In addition, focusing on household is also the limitations of the study. However, the response rate from the respondents is very high which serves as a strength of the study.

Conclusion

Schistosomiasis has been documented as a significant public health concern and calls for active intervention. However, there was still a lack of understanding concerning transmission and prevention. In addition, misconceptions remain a barrier in effective disease prevention. A productive and sustainable intervention however cannot be achieved without adequate education especially among working population. Therefore, there is a need for adequate health education for the disease transmission, feasible control strategies as well as other preventive measures.

In order to halt transmission of the parasite in such community, treatment regimen as well as other control programs should also target especially younger age groups and lower socioeconomic class.

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