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Nursing Prevention of Schistosomiasis and Contributing Factors: A Case of Endemic Area of Musenyi Zone, in Bujumbura-Burundi

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Abstract

Introduction: Nursing prevention strategies for schistosomiasis and contributing factors are very important in promoting the overall well-being of people in tropical regions. The absence of training for nurses on how to apply the population-based prevention strategies against schistosomiasis leads to the incidence of many infections in the ward, including schistosomiasis. However, nurses of healthcare institutions with skills to combat infections are the best professionals to apply to the population on how to prevent schistosomiasis and all the contributing factors with cost-effective intervention! **Purpose**: The purpose of the study was to assess the place of nurses within the prevention of schistosomiasis and contributing factors in a highly endemic of Musenyi zone. **Methodology:** A cross-sectional study with a descriptive aim was conducted in the period of October 2024 on 80 nurses who work in small healthcare facilities of Musenyi zone; a random sampling method was used to select nurses who could participate in this study. A descriptive analysis was done using software called STATA/MP 17.0. **Results:** Findings of this study revealed that 62.50% (OR: 4.81, p = 0.057) of nurses know the preventive methods of schistosomiasis during nursing interventions, 58.75% (OR: 2.26, p = 0.225) indicated that there are existing factors; 93.75% (OR: 1.48, p = 0.034) are not able to use nursing theory during their practice. **Conclusion:** Nursing prevention strategies for schistosomiasis highlight the importance of developing a nursing care plan and addressing the specific needs of patients affected by that parasitic infection. However, to know the contributing factors of preventing schistosomiasis and preventive methods is the first strategy for eliminating that disease

completely. In conclusion, nursing prevention in the nursing profession has provided a higher level of leadership for improving care through research application findings in health promotion.

Keywords

Schistosomiasis, Nursing Prevention, Contributing Factors, Health

1. Introduction

Schistosomiasis affects more than 200 million people worldwide. The Nursing prevention of schistosomiasis known as Bilharzia, is essentially considered to be recommended in tropical regions, particularly in rural and underserved communities in developing countries [1]. It refers to healthcare professionals to reduce the infestation caused by contact with Schistosomes [2]. It is by focusing on nursing prevention that healthcare can reduce the burden of schistosomiasis and its contributing factors on individuals and the entire community in general, and then improve public health outcomes [3]. Therefore, trained nurses in all the small healthcare institutes with skills to combat infections are the most effective strategy to be applied to the population so that they understand how to prevent schistosomiasis (Paul, B.) [4]. In Burundi, there are non-specific studies that have been carried out in all Health care facilities (HCFs) and Universities concerning the Nursing Prevention of Schistosomiasis and the Contributing factors.

2. Conceptual Framework

The place occupied by the nurses in the prevention of schistosomiasis is very crucial; the reason why the Public Health [5].

Ministry and against AIDS, through its different departments, conducted an interview to conclude this study on nursing prevention of schistosomiasis. However, in the Musenyi zone, the people who are living there need help from healthcare promotion and legislation in order to eliminate schistosomiasis by considering them in their holistic (Polman, K.) [6] [7]. The ministry, which has in its attributes education and scientific research, also plays an important role in determining infectious disease determinants in collaboration with the public health ministry and other ministries that are able and integrated in that system [8]. We have as well as cited the contributing factors of preventing schistosomiasis like: mass drug, improving water and sanitation infrastructure, snail control, and promoting hygiene practices, sociocultural factors, socioeconomic factors, education factors, training the nurses and other personals and planning and monitoring evaluation by the ministry agents or through the community health agents [9] [10]. In closing, nursing prevention of schistosomiasis needs many contributing factors in order to reach to the steps that are so important in order to eliminate completely schistosomes in endemic area of Musenyi zone, as well as the consideration of patients in holistic, research, intervention plan, methodology, suggestions and execution

of environmental or economical or physical or behavioral and educational factors. (Kloos, H.) [11] [12].

3. Literature Review

Nursing prevention of schistosomiasis is an available strategy that can decrease the morbidity percentage of that disease [13]. As schistosomiasis is a significant public health concern in many parts of the world, nursing care plan for that disease occupies a big place focused on assessing infections, managing symptoms, preventing complications, providing education, and promoting overall well-being (Van Greertruyden, F.) [14] [15].

Nursing prevention has a rich history of using research in practice, pioneered by Florence Nightingale (Helmy, A. and Carpenter, 2011) [16]. The nursing profession has provided a higher level of leadership for improving care through research application findings in health promotion [17]. However, by implementing evidence-based practice during nursing interventions and promoting a collaborative approach, nurses are able to manage schistosomiasis, providing support and promoting optimal patient outcomes [18] [19].

In short, the efficiency prevention of schistosomiasis has many factors that contribute to nursing in order to enhance the health promotion in disease prevention, as well as: nature of human, fresh water, sanitary hygiene, wearing boots for rice farmers, study level, health education, etc. (Touloupou, P., 2018) [20]. In addition, many other factors have been added to those cited before, like: the frequency of schistosomiasis, the morbidity of disease, environment, social security system, urban infrastructures, etc [21]. However, a clean water supply, sanitation, vector control, and health education can interrupt the spread of schistosomiasis [22]. Furthermore, Braun *et al.* indicated that water treatment could help to reduce schistosomiasis, therefore five water treatment processes are available; as well as: storage, heating, chlorination, filtration, and ultraviolet light [9] [23]. There is also a suggestion that research is still required to find an effective water treatment technique. (Engels, D., 2003) [24].

Overview of the Life Cycle of Schistosomiasis

The parasitic larvae live in fresh water and can penetrate human skin, placing people at risk through everyday activities such as washing laundry or fetching water. Inside the victim's body, adult female worms lay thousands of eggs that cause significant damage to internal organs, most commonly from scarring the intestines, bladder, kidneys, liver, or lungs. Children suffer the most from schistosomiasis, which causes poor growth and impaired cognitive function. However, the disease is completely preventable and can be controlled through an annual inexpensive drug treatment, health education, and access to safe water and sanitation.

In summary, there are seven steps through which the schistosoma parasite enters the human body, noted from first to seventh:

1) In people, the schistosome eggs are passed in stool or urine into water.

2) In water, the eggs hatch and release immature schistosome larvae (called miracidia).

3) The miracidia swim and enter a snail.

4) - 5) Within the snail, the miracidia develop into sporocysts and then into a form (called cercaria) that has a forked tail and can swim in water. The cercariae are released from the snail into the water and penetrate the skin of people who enter the water.

6) When cercariae penetrate the skin, they lose their tail and become schistosomula. The schistosomula then travel to the liver, where they mature into adults.

7) Male and female worms pair up and migrate to the veins in the intestine or bladder (depending on their species). There, where they remain, the females begin to lay eggs. (Skelly, 2008).

4. Method

A cross-sectional study with a descriptive aim was conducted in October 2024 for 80 nurses among 85 nurses who worked in all the small healthcare facilities of Musenyi zone in New Bujumbura province. In addition, the sample size was chosen using the Yamane formula: $n = N/1 + N.e^2$; so $n = 80/1 + 80.(0.05)^2$; also, a sampling random method was used to select nurses who can participate in this study; that means the simple selection data was one of the benefits. The inclusion criterias were to be a worker of musenyi zone, own acceptation to participate in our study, be a nurse, and to have a diploma in nursing with each level; in contrast, the exclusion criterias were to refuse the own participation, to be in annual holiday time, to be a nurse who arrived but not worked in that study area, and not have a diploma. Furthermore, a descriptive analysis was conducted using STATA/MP 17.0 software. In assessing the nurses' knowledge in nursing prevention of schistosomiasis, focusing on preventive methods, existing contributing factors, using nursing theory, and implementation of IBP. All procedures relating to ethical consideration were respected before, during, and after the data collection process, and all stakeholders validated the questionnaire to meet the scientific requirements.

5. Results

The findings of this study revealed that 50 out of 80, or 62.50% (OR: 4.81, $p = 0.057$) of nurses know the preventive methods of schistosomiasis during nursing interventions, it also showed that a majority of nurses, 58.75% (OR: 2.26, $p = 0.225$) accepted the existing of contributing factors in nursing prevention strategies during their practice. It revealed also, that a significant number of nurses accepted the presence of the cases of schistosomiasis in Musenyi area at 67.50% (OR: 1.33, $p = 0.031$); 93.75% (OR: 1.42, $p < 0.034$) are not able to use nursing theory during their practice and only 32% (OR: 2.09, $p < 0.001$) are able to implement IBP. This explained that the Musenyi area is concerned about this problem, and the nurses need training to combat it. That explains that the application is not carried out to help the nurses of the Musenyi zone, and this could be observed by the risk of an increased rate of morbidity/mortality and an increasing number of hospitalizations (**Figure 1**).

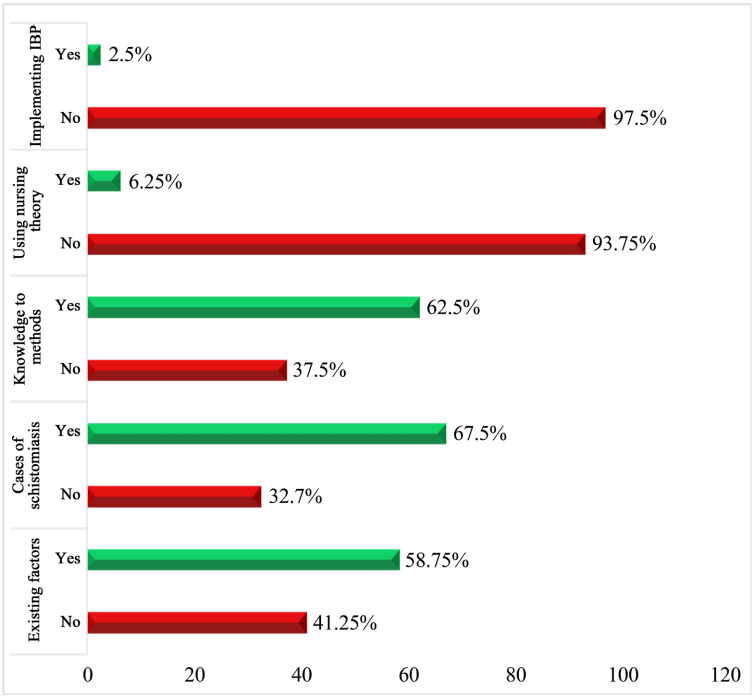

Figure 1. Distribution of the survey sheet on schistosomiasis' knowledge and the use of nursing theories.

Table 1. Distribution of sociodemographic characteristics (n = 80).

Variables	Frequency (%)
Gender	
Male	33 (41.25)
Female	47 (58.75)
Age Group (Years)	
20 - 29	24 (30.00)
30 - 39	39 (48.75)
40 - 49	14 (17.5)
>50	3 (3.75)
Education Level	
A3 (Underground Train)	1 (1.25)
A2 (Secondary School)	57 (71.25)
Bachelor	19 (23.75)
Maters	3 (3.75)
Experience Period (Years)	
1 - 5 Years	40 (50.00)
6 - 10 Years	35 (43.75)
11 – 15 Years	4 (5.00)
>15 Years	1 (1.25)

In this study, socio-demographic factors according to the participants in the prevention of schistosomiasis are listed. Among 80 nurses who took part during our survey, the majority were female (58.75%); the mean of age range was 30 to 39 years (48.75%); according to education level, the majority had humanity diploma or A2 (71.25%); and the mean of experience of participants was 1 to 5 years (50%) and 6 to 10 years (43.75%) effectively (Table 1).

The following table shows that the characteristics of participants in nursing prevention of schistosomiasis have been very significant, as it is listed in our results. This study has explained the contributing factors during the prevention of schistosomiasis with a significant range of $p \leq 0.05$, OR = 2.26, and standard error SD > 100.00 in general. According to the existing factors, the significance based training about schistosomiasis is $p = 0.26$ (OR = 1.42), cases of schistosomiasis at musenyi zone with $p \leq 0.031$, knowledge of preventive methods with $p \leq 0.057$ (OR = 4.81), knowledge of one nursing theory with $p = 0.024$, explanation to patients about preventing schistosomiasis ($p = 0.033$), and knowledge of transmission method ($p \leq 0.055$) (Table 2).

Table 2. Characteristic of participants in nursing prevention strategies of schistosomiasis and existing contributing factors.

Existing Factors/Explanatory Variables	Coefficient	Standard error	z	p > |z|	[95% Conf.]	OR
Gender	268.0943	683.4311	2.19	0.028	1.8129	
Age	60.756 04	172.3373	1.76	0.079	3.4845	
Experience	18.690 72	100.4217	1.16	0.044	6.5206	2.26
Training about schistosomiasis	5.470 10	81.2571	1.13	0.260	2.8385	1.42
Cases of schistosomiasis	17.5133	607.1982	2.15	0.031	1.9571	
Knowledge of preventive methods	48.8141	159.228	1.90	0.057	8.2491	4.81
Knowledge of one nursing theory	5.0117	906.0018	2.25	0.024	1.9501	
Explanations to patients	272.4546	365.9687	0.97	0.033	1.9585	
Level of internalization	22.7008	151.5216	1.21	0.225	6.0546	
The most effective nursing theories	7.990 07	64.6008	2.31	0.021	1.0415	
Satisfaction in using nursing theory	11.107 09	32.1522	0.83	0.406	3.8157	
Influencing factors	118.8316	2.1900	0.09	0.092	3.2077	
Transmission method	124.3220	90.9227	1.92	0.055	7.4011	
Prior measure	29.5551	18.8405	1.91	0.056	1.0309	
Collaboration level	5.9886	92.9408	1.15	0.249	2.8596	
Awareness-raising activities	4.3268	43.1702	1.47	0.142	6.1221	

6. Conclusion

Nursing prevention strategies of schistosomiasis highlight the importance of developing a nursing care plan based on the specific needs of people affected by this par-

asitic infection [25] [26]. However, knowing the contributing factors in preventing schistosomiasis comes first in the strategies of eliminating that disease completely. That is explained by the reason that a big number of nurses do not implement nursing theory throughout their interventions and doesn't know its importance [27]; also it revealed a weak awareness on prevention of schistosomiasis and its importance during nursing practice among participants as for almost all variables, participants were scoring less than except for the indicators of patients' satisfaction with nursing interventions through health education on prevention of infectious diseases including schistosomiasis. (Helmy, A. & Carpenter, H., 2011) [28].

7. Recommendations

The following are the recommendations from our study:

Nurses should apply the research on the prevention of schistosomiasis in their daily activities in order to achieve the outcomes as the main target, create a spirit of interpersonal collaboration, develop a habit of using nursing theories during their practices, inform patients about the steps of preventing schistosomiasis during nursing care, and prioritize the information collected when treating patients.

The Healthy District leaders should revise their training plan in order to include the skills related to the prevention of parasitic diseases like schistosomiasis, so that it will help nurses conduct the interventions based on good orientation and then provide well-being during health education.

Small Healthcare Facilities (SHCF) should provide in-service training for nurses about the prevention of parasitic diseases, promote nurses with a high level of expertise in helping other categories during the implementation of survey skills, and establish guidelines for helping nurses on how to conduct evidence-based practice in their daily activities.

In conclusion, to reduce the high risk that could be recorded by patients and for the site of SHCF in the Musenyi area, it is important for the health ministry to train the nurses on the prevention of schistosomiasis and its consequences. For the university, it is important to include in their curricula the information related to the transmission model, diagnosis method, and prevention of infectious diseases, including schistosomiasis.

8. Delimitations

This study was based on the prevention of schistosomiasis and contributing factors in the Musenyi zone for all the nurses at all levels in small healthcare facilities. The application of this study involved the analysis of the competence of nurses in the Musenyi zone about the prevention of schistosomiasis and contributing factors; it was also conducted in the short term, in October 2024.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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