

Knowledge and Self-Reported Practice about Prevention of Worm Infestation among the Mothers of 3 to 10 Years Old Children having Worm Infestation

Maragatham S^{1*}, Jerin, R², Suganya M³, Parimala L² and Bhuvanewari G⁴

¹Department of Medical Surgical Nursing, Saveetha College of Nursing, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

²Department of Nursing, Saveetha College of Nursing, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

³Department of Sociology, Saveetha College of Nursing, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

⁴Department of Community Health Nursing, Saveetha College of Nursing, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

Abstract

Worm infestation is one of the silent and prevalent diseases in developing countries, is more common among children, and can cause nutritional impairment and poor development. Knowledge of worm infestation among mothers can reduce the incidence of worm infestation and its complications in the family. Descriptive research design used. After obtaining permission, 40 samples were selected by convenience sampling technique. The purposes of the study were explained, obtained written informed consent and collected the data using the tools for demographic variables, knowledge and self-reported practice about the prevention of worm infestation. Descriptive and inferential statistics were used for data analysis. The result showed that 12 (30%) of mothers had inadequate, 8 (20%) had moderately adequate and 20 (50%) had adequate knowledge of worm infestation. Regarding the self-reported practice, 14 (35%) had poor, 12 (30%) had moderate and 14 (35%) had good practice for prevention of worm infestation. There was a negative correlation $r = -0.0823$ between knowledge and self-reported practice. The only association found was between the practice and the husband's occupation, $X^2 = 9.9943$, $P = 0.040523$. At the end of the study, all the participants were educated about the prevention of worm infestation among children. This study concluded that a significant proportion of mothers had inadequate knowledge and poor self-reported practices regarding the prevention of worm infestation. Efforts should be focused on promoting effective preventive practices like improving environmental sanitation for the well-being of children in rural communities.

Keywords: Environmental Sanitation, Knowledge & Self-Reported Practice, Mothers of Children, Worm Infestation.

Introduction

Worms are known as parasites that infest and live in the host with minimal or no symptoms. Worms may be of many sizes, shapes and lengths from microscopic Pin worms to Tape worms that are several feet long. The invasion

of worms referred to as worm infestation, is common in children all over the world [1]. According to WHO [2] globally there are 1221-1472 million cases of ascariasis and 750-1050 million cases of trichuriasis.

One of the silent and prevalent diseases in developing countries especially India is Worm

Received: 11.06.2024

Accepted: 31.07.2024

Published on: 27.08.2024

*Corresponding Author: maragathamk.scon@saveetha.com

infestation. It is more prevalent among schoolchildren. It can cause nutritional impairment and poor development of children. Knowledge of the worm infestation can assist in the early detection of the diseases and reduce the incidence of complications. The prevalence of anaemia among the entire study population (350 children) and in those infected with worms was 56.6% and 56.9% respectively. Worm infestation is any macro-parasitic disease of humans and other animals in which a part of the body is infected with parasitic worms. It is estimated by WHO during 2014-15 [3], that approximately 1.5 billion people were infected with soil-transmitted helminthiasis. Even though the problems associated with the worms are drastic, these do not grab headlines like other diseases. A study [4] conducted at Karaikkal, India found that the mothers of school-age children need to improve not only their knowledge but also their attitude and practices on worm infestations.

In another study [5] it was found that the mothers of under-five children had poor knowledge related to worm infestation. The overall level of view about the optimum knowledge, attitude, and practice of mothers on the prevention and control of intestinal parasites is significantly low. A study [6] concludes that awareness about intestinal parasitic infestation prevention and control should be assessed as an early step and followed by creating awareness through campaigns or structured training. World Health Organization recommends [7] public health intervention using periodic medication. Therefore, this study was planned with the following objectives, 1. To assess the knowledge regarding the prevention of worm infestation among the mothers of 3-10-year-old children with worm infestation. 2. To assess the self-reported practice regarding prevention of worm infestation among mothers of 3-10-year-old children with a worm infestation. 3. To find the correlation between the knowledge and self-reported practice regarding prevention of worm

infestation among mothers of 3-10-year-old children with a worm infestation. 4. To find the association between knowledge and self-reported practice with selected demographic variables of the participants.

Methods and Materials

A qualitative research approach and descriptive research design were used to assess the knowledge and self-reported practice about the prevention of worm infestation in children among the mothers of 3-10-year-old children having worm infestation in selected rural areas in Kanyakumari district, south India. After ethical approval and obtaining permission from the setting, the purpose of the study was explained to the mothers. There were around 90 mothers contacted for stool examination to assess worm infestation among their children in the age group of 3 – 11 years, in which 57 mothers gave willingness, therefore 67 of their children's stool examination was done for worm infestation. Among the stool positive for worm infestation, 40 mothers of children who had worm infestation selected by continence sampling technique, who met the inclusion criteria were selected.

Obtained written informed consent from the mothers and the data collected using the tools for demographic variables of mother & child, the structured questionnaire used to assess knowledge about the prevention of worm infestation among children and checklist used to assess the self-reported practice about the prevention of worm infestation among their children. The time taken for each client is 20 minutes. At the end of the study, all the participants were individually educated about the prevention of worm infestation among children by lecture cum discussion method. The collected data were coded and entered in Excel for further data analysis. Descriptive statistics and inferential statistics were used for data analysis. The schematic representation of the study is presented in Figure 1.

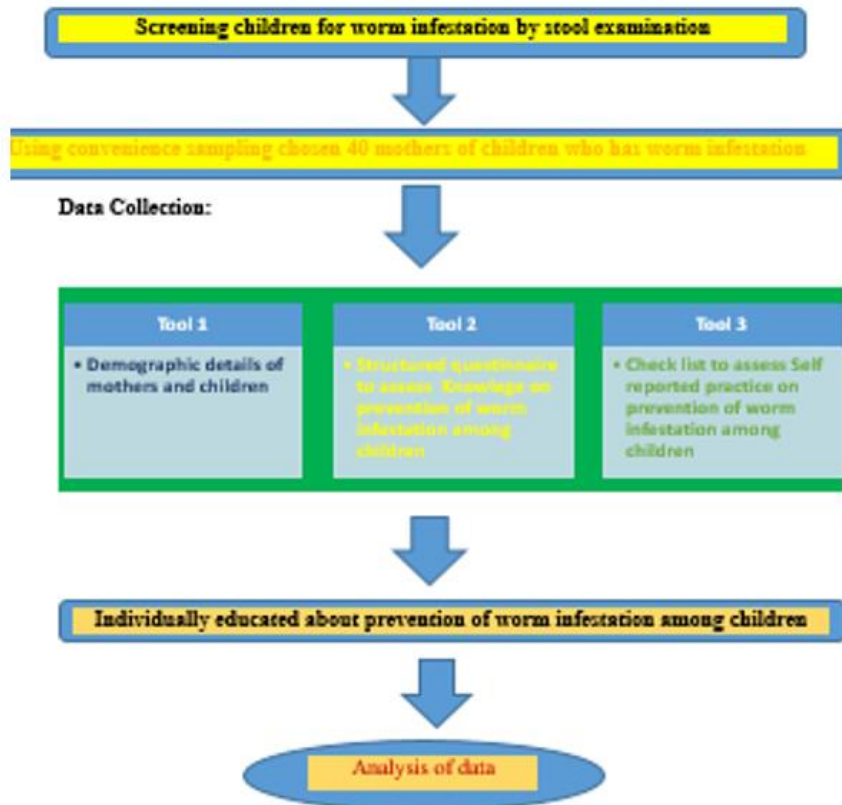


Figure 1. Schematic Representation of the Data Collection Procedure

Result

The findings of the study are presented in five sections, namely demographic details, knowledge, self-reported practice, correlation of knowledge with practice and association.

Description of the Demographic Variables of Mothers

The Frequency and percentage distribution of demographic variables for the mothers is presented in Table 1.

Table 1. Frequency and Percentage Distribution of Demographic Variables for the Mothers of Children Having Worm Infestation. n = 40

S. No	Demographic Variables	Frequency (f)	Percentage (%)
I	Age in years		
	23--26	11	27.5
	27--31	15	37.5
	32--35	7	17.5
	>35	7	17.5
II	Educational status of the husband		
	No formal education	9	22.5
	Primary school	10	25
	Secondary school	9	22.5
	Graduate and above	12	30
III	Mother's occupation:		
	Homemaker [specify]	18	45

	Labour [specifies]	22	55
IV	Type of family:		
	Nuclear family.	33	82.5
	joint family	7	17.5
V	Husband occupation		
	Agricultural labour	6	15
	Business	20	50
	private employee	14	35
VI	Family income per month in Rupees		
	10000-20000	14	35
	20000-30000	17	42.5
	More than 30000	9	22.5
VII	Source of drinking water		
	Tap	28	70
	Hand pump	3	7.5
	others	9	22.5
VIII	Place of defecation		
	The back side of the house	2	5
	Agricultural field	6	15
	Sanitary latrine	32	80

The analysis revealed that most of the mothers of children having worm infestation, 15 (37.5%) were aged between 27-31 years, 312 (30%) were graduates and above, 22 (55%) were working mothers, 33 (82.5%) belonged to nuclear family, 20 (50%) had own business, 17 (42.5) had family monthly income of rupees 20000 - 30000, 28 (70%) got their source of

drinking water from tap, 32 (80%) was using sanitary latrine for defecation, 28 (70%) source of information collected from mothers. All their children belonged to the age group of 3 - 10 years. Each mother having one child in the age group was enrolled for the study. The place of defecation of children is presented using a pie chart in Figure 2.

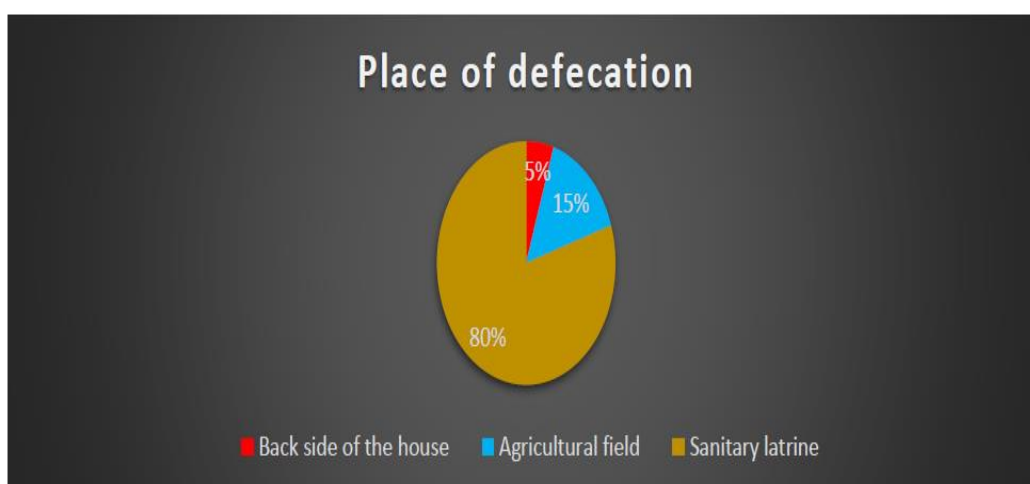


Figure 2. Place of Defecation among Mothers of Children Having Worm Infestation

Knowledge Regarding Prevention of Worm Infestation among Mothers of Children with Worm Infestation

The level of Knowledge on worm infestation among the mothers was, inadequate for 12 (30%) of them, moderately adequate for 8

(20%) and adequate for 20 (50%). Therefore, it is clear that half of the participants had adequate knowledge. Despite their moderate and adequate knowledge, their children had worm infestation. The levels of knowledge on the prevention of worm infestation among children are presented as a bar graph in Figure 3.

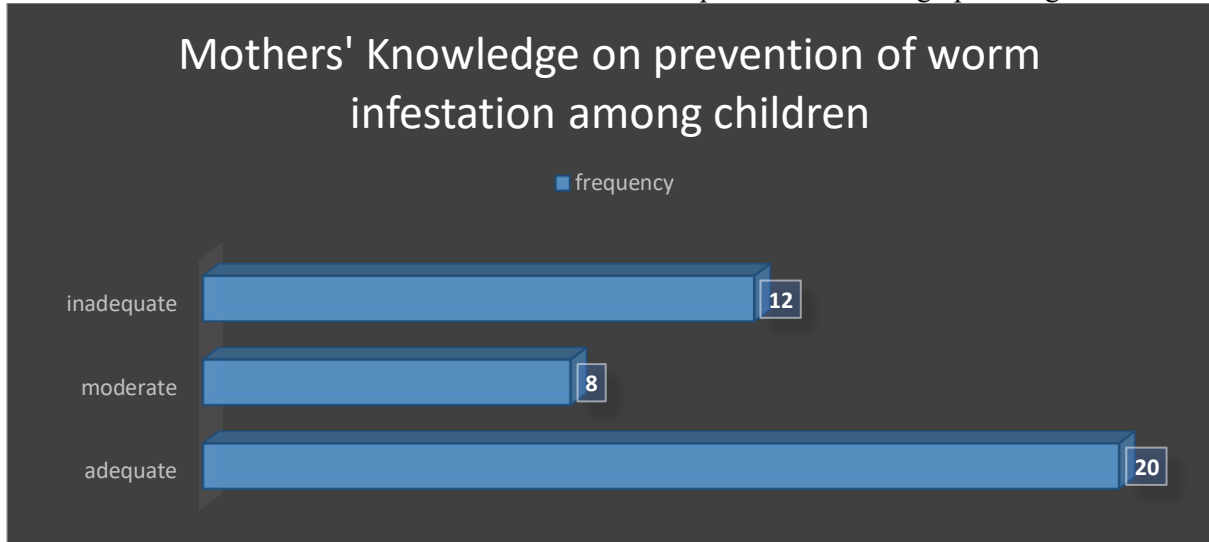


Figure 3. Mothers' Level of Knowledge on Prevention of Worm Infestation among Children

Self- Reported Regarding Prevention of Worm Infestation among Mothers of Children with Worm Infestation

The details of Self-reported regarding prevention of worm infestation among mothers of children with worm infestation are presented in Table 2.

Regarding the self-reposted practice about prevention of worm infestation, 14 (35%) mothers had poor practice, 12 (30%) had moderate practice and 14 (35%) had good practice. The finding shows that the mothers

35% of them had poor and adequate self-reported practice on the prevention of worm infestation among children.

The correlation between knowledge and practice is presented in the following section.

Correlation between the Knowledge and Self-Reported Practice about Prevention of Worm Infestation Among Children

The details of the between the knowledge and self-reported practice about the prevention of worm infestation among children are presented in Table 3.

Table 2. Level of Self-Reported Practice Regarding Prevention of Worm Infestation among Mothers of Children With Worm Infestation. n = 40

S. No	Level of Self- reported practice	Frequency	Percentage
1	Good	14	35
2	Moderate	12	30
3	Poor	14	35

Table 3. Correlation of Knowledge and Practices of Mothers Regarding Prevention of Worm Infestation among Children. n = 40

Prevention of worm infestation	Mean ± SD	Karl Pearson coefficient correlation
Knowledge	4.75± 3.01	r = - 0.0823, P = < 0.05, non-significant
Practice	6± 2.69	

There was no significant positive correlation between the mothers' knowledge and their self-reported practice about the prevention of worm infestation among children. R = -0.0823 at P = < 0.05 level, showed a negative correlation. It was evident that 50 % of the mothers had adequate knowledge about the prevention of worm infestation among children but, only 35% of the mothers had good practices in the

prevention of worm infestation among children. Therefore, knowing did not influence them to follow preventive measures.

Association between the Knowledge with Selected Demographic Variables

The details Association between the knowledge and selected demographic variables are presented in the following Table 4.

Table 4. Association between the Knowledge and Selected Demographic Variables. n = 40

Demographic Variables	Adequate 20		Moderate 8		Inadequate 12		Chi-square test
	f	%	f	%	f	%	
Age in years							X ² = 2.4612, P=0.872786 NS
23--26	4	10	3	7.5	4	10	
27--31	7	17.5	3	7.5	5	12.5	
32--35	4	10	1	2.5	2	5	
>35	5	12.5	1	2.5	1	2.5	
Educational status of the husband							X ² = 4.8426, P=0.564155 NS
Non literate	5	12.5	1	2.5	3	7.5	
Primary school	5	12.5	2	5	3	7.5	
Secondary school	3	7.5	4	10	2	5	
Graduate and above	7	17.5	1	2.5	4	10	
Mother's occupation:							X ² = 0.9428, P=0.62414 NS
Home maker [specify]	10	25	4	10	4	10	
Labour [specify]	10	25	4	10	8	20	
Type of family:							X ² = 0.404, P=0.817078 NS
Nuclear family.	17	42.5	6	15	10	25	
joint family	3	7.5	2	5	2	5	
Husband occupation							X ² = 2.6595, P=0.616396 NS

Agricultural labour	2	5	1	2.5	3	7.5	
Business	9	22.5	5	12.5	6	15	
private employee	9	22.5	2	5	3	7.5	
Income per month in rupees							X ² = 7.8282, P=0.98078 NS
10000-20000	6	15	6	15	2	5	
20000-30000	9	22.5	1	2.5	7	17.5	
More than 30000	5	12.5	1	2.5	3	7.5	
Source of drinking water							X ² = 1.8148, P=0.769771 NS
Tap	15	37.5	6	16	7	17.5	
Hand pump	1	2.5	1	2.5	1	2.5	
others	4	10	1	2.5	4	10	
Place of defecation							X ² = 3.3921, P=0.494473 NS
Back side of the house	1	2.5	1	2.5	0	0	
Agricultural field	1	2.5	2	5	3	7.5	
Sanitary latrine	18	45	5	12.5	9	22.5	

From table 4, there was no significant association found between the levels of mothers' knowledge on prevention of worm infestation in children and their demographic variables age, education, occupation, husband's occupation, family monthly income, source of drinking water and place of defecation.

Association between the Levels of Self-Reported Preventive Practice of Worm Infestation with Selected Demographic Variables

The details Association between the level of self-reported practice and selected demographic variables are presented in the following Table 5.

Table 5. Association between the Levels of Self-Reported Preventive Practice of Worm Infestation with Selected Demographic Variables

Demographic Variables	Good 14		Medium 12		Poor 14		Chi-square test
	f	%	f	%	f	%	
Age in years							X ² =8.1319, p=0.228596 NS
23--26	4	10	3	7.5	4	10	
27--31	3	7.5	7	17.5	5	12.5	
32--35	2	5	1	2.5	4	10	
>35	5	12.5	1	2.5	1	2.5	
Educational status of the husband							X ² =10.5582, P=0.103029 NS
Non literate	1	2.5	5	12.5	3	7.5	
Primary school	5	12.5	2	5	3	7.5	

Secondary school	1	2.5	4	10	4	10	
Graduate and above	7	17.5	1	2.5	4	10	
Mother's occupation:							X ² =0.7504, P=0.687165 NS
Homemaker [specify]	7	17.5	6	15	5	12.5	
Labour [specifies]	7	17.5	6	15	9	22.5	
Type of family:							X ² =0.2556, p=0.880022 NS
Nuclear family.	11	27.5	10	25	12	30	
joint family	3	7.5	2	5	2	5	
Husband occupation							X ² =9.9943, p=0.040523 S
Agricultural labour	2	5	1	2.5	3	7.5	
Business	3	7.5	9	22.5	8	20	
private employee	9	22.5	2	5	3	7.5	
Income per month in rupees							X ² =7.9267, P=0.094299 NS
10000-20000	6	15	6	15	2	5	
20000-30000	3	7.5	5	12.5	9	22.5	
More than 30000	5	12.5	1	2.5	3	7.5	
Source of drinking water							X ² =1.9803, P=0.739374 NS
Tap	9	22.5	10	25	9	22.5	
Hand pump	1	2.5	1	2.5	1	2.5	
others	4	10	1	2.5	4	10	
Place of defecation							X ² =1.1982, P=0.878402. NS
The back side of the house	1	2.5	1	2.5	0	0	
Agricultural field	1	2.5	2	5	3	7.5	
Sanitary latrine	12	30	9	22.5	11	27.5	

The findings of the chi-square test from Table 5 reveal that there was no significant association between levels of self-reported practice among mothers of children having worm infestation with their demographical variable except for the demographical variable husband's occupation.

Discussion

The present study showed that 50% of the mothers had adequate knowledge and 35% had poor and adequate practice on the prevention of worm infestation. In contrast, there was a study (6) revealed more practice than knowledge was stated as good maternal knowledge 45.2% and practice 51.4 % on prevention and control of intestinal parasitic infestation. Similarly in another study [6] 45.2% of them had good maternal knowledge and 55.3% had good practice on worm infestation. In contrast in

another study [8] it was revealed that the majority of them had poor knowledge and 50% of them had adequate practice on the prevention of worm infestation. In another study [9] it was found that 59 percent had good knowledge regarding the prevention of worm infestation and 37 percent of the mothers had poor practice.

Further in a study [10], the researchers evaluated the knowledge on prevention of worm infestations among mothers of under five children and found that among 60 samples 59(98.4%) of mothers have inadequate knowledge and 1(1.6%) of mothers have adequate knowledge regarding prevention of worm infestation. A study conducted at a community-based, cross-sectional survey [11] among 100 mothers, assessed the knowledge regarding worm infestations in selected slums in Pune and revealed that 75% of them had average knowledge, 22% had poor knowledge

& only 3% had good knowledge regarding worm infestation.

In this study negative correlation ($r = -0.0823$, $P = < 0.05$) was found between knowledge and practice on prevention of worm infestation among mothers of 3- 10-year-old children. In contrast, it was found in another study [12] that there was a positive correlation ($r = 0.482$) between knowledge and practices of mothers regarding worm infestations. In a different study [13] there was a positive correlation between knowledge and practice among participants, it was significant at $p < 0.01$.

In this study, there was no association between the levels of knowledge on the prevention of worm infestation in children with mothers' demographic variables. A study [14] found an association between the level of knowledge on deworming with the demographic variables age and education. Another study [15] found that there was no significant association between knowledge level and demographic variables. In a different study [16], there was a statistically significant association found between level of knowledge and demographic variables such as age, education and monthly income of the family. There was a statistically significant association found between the level of practices and demographic variables such as education and occupation.

In this study, there was no association between the levels of self-reported practice on prevention of worm infestation in children with mothers in all demographic variables except, the husband's occupation $X^2 = 9.9943$, $P = 0.040523$. A study [17] found a statistically significant effect of Age of mothers, Education of mother, Education of husband, Occupation of mother, Occupation of husband, and Type of family on practice score among participants.

Overall findings of the present study, there is a need to improve the knowledge and practice to prevent worm infestation, therefore individual mothers are educated on the prevention of worm infestation. Similarly, a

study also concludes the need for improving the knowledge and practice to prevent worm infestation [12]. An experimental study concluded that the mothers of preschool children have gained adequate knowledge of worm infestation which proved that the innovative health counselling program was highly effective among them [18]. Community awareness about intestinal parasitic infestation prevention and control should be created through campaigns or structured training [6]. Health education, frequent monitoring, and conducting interventional programs among parents and caregivers would be vital so that the prevalence of the disease can be minimized as worm infestation is a public health problem.

In the present study, based on the recognised need to create awareness of the prevention of worm infestation among children, the participants were educated at the end of the study. The authors of a study [19] state that the control measures are difficult to implement in developing countries due to lack of clean water, poor sanitation, and low coverage of education. A study [20] concludes that the societal level of healthiness is influenced by four factors. Knowledge, attitude, and practice are the most dominant and significant factors in the dynamicity of society's level of healthiness.

Conclusion

A significant proportion of mothers had inadequate knowledge and poor self-reported practices regarding the prevention of worm infestation among children. Efforts should be focused individually and on families on improving knowledge and promoting effective preventive practices to address this issue and ensure the well-being of children in rural communities.

Novelty of the Study

This study intended to assess the knowledge and self-reported practice of mothers on the prevention of worm infestation in their children and found the need to educate them. A tailor-

made education for individuals and families can be initiated in the future study.

Achievement

Most of the mothers thought that their children were free from worm infestation, and the stool examination report made them more responsible for preventive practices.

Conflict of Interest

The author(s) declared no potential conflicts of interest concerning this research, roles of authorship and publication of the article.

Limitation

The same participants could have been followed over some time after the education about the prevention of worm infestation and could have revealed their practices and the incidence of worm infestation among their children.

Study findings are limited to the participants since it is a small size and non-random sampling.

Reference

- [1]. Saranya, M, Sivasakthi, M, Bharathi B. M., 2021, Worm Infestation among All Integrated Child Development Scheme (ICDS) Mothers, *J Res Med Dent Sci*, 9(12):251-254.
- [2]. Brooker, Simon, 2010, Estimating the Global Distribution and Disease Burden of Intestinal Nematode Infections: Adding Up The Numbers—A Review, *Inte J Parasit*, 40, 1137-1144. http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf
- [3]. Kalaivani, E., & Ambujam, G., 2020, Comparative Study to Assess the Knowledge on Worm Infestation among Urban and Rural Mothers of School Going Children (3-12 Yrs) at Karaikal District. Medico-Legal Update.
- [4]. Yadav, S., Kumar, R., Singh, S. K., 2021, Effectiveness of Planned Teaching Programme Regarding Worm Infestation on Knowledge among Mothers of Under-Five Children in Rural Area of

The Solution to the Existing Problem

Despite health care measures at the national to school health level for prevention of worm infestation was not achieved fully in rural communities. Even knowing did not bring desirable practices to prevent worm infestation, as revealed in this study. Unless the individual and family behavioural changes are inculcated, it is hard to achieve. Therefore, it is necessary for continuous and reinforced education and follow-up.

Acknowledgement

The authors would like to express thankfulness to the college and management for their support. The mothers of 3–10-year-old children were thanked for their participation in this study, without their participation and cooperation this study could have been not possible.

Lucknow District. *Int J Community Med Public Health.*, 8:267-72.

[5]. Kassaw, M. W., Abebe, A. M., Abate, B. B, Zemariam, A. B, & Kassie, A. M., 2020, Knowledge, Attitude and Practice of Mothers on Prevention and Control of Intestinal Parasitic Infestations in Sekota Town, Waghimra Zone, Ethiopia, *Pediatric Health, Medicine and Therapeutics*, 11; 161-169, Doi: 10.2147/PHMT.S229610

[6]. World health organization, 2015, Weekly Epidemiological Record Soil Transmitted Helminthiasis: Number of Children Treated in 2023. 10 (19), 89 -96.

[7]. Sathiyabama, 2024, A Study to Assess the Knowledge and Practice of Worm Infestation among Mothers in Pudhucolony Rural Community Area at Erode District, *IJNRD*, 9(3).

[8]. Jacob, 2021, Assessment of the Knowledge and Practice regarding Prevention of Worm Infestation

among Mothers of Children in a Selected Rural Community of West Bengal, *NJI*, CXII (2).

[9]. Suganya V, Jaimy Scaria, Dr. Indira S, B Kavitha, Ramya K, Revathi D, Naveen Kumar M. R., 2018, *International Journal of Academic Research and Development*. 3(2); 1075-1078.

[10]. Sadhna Shinde, Suresh Ray & Karpagavalli, 2015, *Asian Academic Research Journal of Multidisciplinary*. 2(5) ISSN: 2319 – 2801.

[11]. Swarajyam Y, 2011, A Study to Assess the Knowledge and Practices of Mothers Regarding Worm Infestation among School age Children (6-12 Years) in Order to Develop Health Education Pamphlet in a Selected Rural Community, Bangalore, *Asian Journal of Nursing Education and Research*, 1(1).

[12]. Daljit K., 2015, Effectiveness of Structured Teaching Programme on Knowledge and Practices Regarding Prevention of Intestinal Worm Infestations among the Mothers of 1–5 Years Children, *International Journal of Nursing Education*, 7(2), pp. 19–22.

[13]. Bahago, Nosah, I. and Oyewole, Emmanuel O., 2023, Knowledge, Perception and Practice of Deworming among Mothers of Under-Five Children in Rural Communities of Lafia LGA, North Central Nigeria. Available at SSRN: <https://ssrn.com/abstract=4202185> or <http://dx.doi.org/10.2139/ssrn.4202185>

[14]. Gupta, M. M., Kandula, U. R., Sachan, S., Joseph, A. V & Baghel, S., 2022, Assess the

Knowledge Regarding Worm Infestation among Mothers of Pre-School Children, *IJFANS*, 11(7).

[15]. Jagadeesan, M, Mariraj, I, Prasanna Karthik, S, Kannan, R, Nivaas, M, Lohitya, J, Raghul, U, Farah Kamaludeen, 2021, A Study about Knowledge, Attitude and Practice (KAP) Regarding Worm Infestation among the Caregivers of Children aged between 5 – 12 years in a Tertiary Care Hospital, *International Journal Of Research In Pharm Science*, 10(3).

[16]. Daljit K, 2015, Effectiveness of Structured Teaching Programme on Knowledge and Practices Regarding Prevention of Intestinal Worm Infestations among the Mothers of 1–5 Years Children, *International Journal of Nursing Education*, 7(2), pp. 19 – 22.

[17]. Gnamani, kamalam & Ramaprabhu, 2018, Assess the Level of Knowledge and Practice among Mothers of Pre-school Children about Worm Infestation and Effectiveness of Innovative Health Counselling, *Pondicherry Journal of Nursing*, 11(1).

[18]. Steinmann, P, Keiser, J, Bos, R, Tanner, M. U. 2006, Schistosomiasis and Water Resources Development and Estimates of People at Risk. *Lancet Infect Dis.*; 6(7):411–425. Doi: 10.1016/S1473-3099(06)70521-7

[19]. Braveman, P, Gottlieb, L. The Social Determinants of Health: it's Time to Consider the Causes of the Causes. *Public Health Rep.* 2014 Jan-Feb; 129 Suppl. 2 (Suppl. 2):19-31. Doi: 10.1177/00333549141291S206. PMID: 24385661; PMCID: PMC3863696.