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# Prevalence of *Enterobius Vermicularis* (pinworm) in Kermanshah city nurseries, using Graham: 2014

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## ABSTRACT

*OXY-URIASIS* is one of the most prevalent parasitic diseases in children and over 200 million people on Earth are infected. Aim of this study was an investigation of prevalence of *Enterobius Vermicularis* in Kermanshah city nurseries. This was a cross sectional (descriptive - analysis) study. Clustered Random Sampling was done, data was collected by questionnaire. According to the prevalence of this disease, Sample size was a determined 92 subjects in Kermanshah city nurseries. Samples were examined in the Kermanshah reference laboratory of parasitology. CHI-SQUARE test was used to determine the relationship between infection and different variables. Data was analyzed by using (SPSS version 18). In this study, 95 children were observed from the kindergartens in Kermanshah. In 14.7% of the children, *oxy-uriasis* (pinworm) was diagnosed. In total 13.7% children were infected for the first time. Significant relationship between sex and *oxy-uriasis* were observed. Among these children 7% had sucking habits, 14.3% had itching symptoms and 57% had signs of fatigue. The relationship between father s job and mother s job with *Oxy-uriasis* was statistically significant. The prevalence of *oxy-uriasis* among children in Kermanshah city kindergartens was 14.7%. Attention to personal hygiene by parents can help in reducing the disease. In all societies, whether poor or rich, if they do not observe hygiene and care towards children prevalence of this disease will increase .female children pay more attention to health and hygiene therefore they are less prone to *Oxy uriasis*.

**Key words:** *EnterobiusVermicularis*, *Oxyure*, Pinworm, nursery, Children, Kermanshah

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## 1. INTRODUCTION

**O**xyuriasis is one of the most prevalent parasitic diseases in children which is caused by *Enterobius-vermicularis* infections. It is estimated that over 200 million people on Earth are infected. Female worm exits the anus at night and lays their eggs on the skin around the anus that will contain the larvae. Anal itching is a major symptom of the disease resulting in the transfer of eggs

to the hands, especially the fingernails, and therefore will be able to infect others and himself (Autoinfection). The Eosinophilia is uncommon and low in this disease (1). Although the worm is often considered as symbiotic (commensally), but in many cases, especially in children, causing symptoms that include anal itching, abdominal pain, nausea and vomiting, irritability, and teeth grinding (2).

Advances in medical sciences have decreased morbidity and mortality in recent years. Nevertheless, parasitic infection is one of the most common health problems in developing countries and so developed countries. It appears that prevalence of infectious diseases is specific to underserved and poor areas, but the interesting thing is that privileged people have this disease too (3-6). Given the above, the rate of infection varies in different parts of the world. In North America and Western Europe, the incidence of infection is about 30% and among children is probably between 60-50% (7). In Iran, the spread of intestinal parasites and oxyuriasis is Unavoidable, because of type of work, life style and health status, unsanitary drinking water and the use of animal and human manure, (8-10) weak sewage system, waste spills in water in broken pipe in urban and rural areas, and the weakness in crisis management. In one study, an increased incidence of urinary tract infection in oxyuriasis was reviewed and it was shown that these cases in girls are more than boys. It has been observed that 57% of children with urinary tract infection were infected by *oxyure*, while only 10% of children had no urinary tract infection were infected by *oxyure* (11). Due to lack of time in research related to oxyuriasis recently, this research was done in Kermanshah. The researchers decided to do this study to determine of prevalence of *Vermicolaris Enterobius* (pinworm) in Kermanshah city nurseries because of geographical distribution and cultural diversity in rural an urban residents, people of different levels of social welfare, possibility of neglect of the disease by health officials and the importance of the treatment of this disease.

## 2. MATERIALS AND METHODS

This was a cross sectional (descriptive - analysis) study. According to the prevalence of this disease, Sample size was determined to 92 subjects in Kermanshah city nurseries. Nurseries that have the lowest levels of health were selected according to report of the Welfare Organization of Kermanshah. Nurseries that had been examined and had been trained by experts in personal health and well-being of prevention were excluded. Other kindergartens were put in the statistical community. In order to ensure the accuracy of data collection 100 patients were selected. Cluster Random Sampling was done Data was collected by questionnaire. The questionnaire included questions on age, sex, childcare, parental education level, mother's occupation, family size, health status, and healthy habits of children. The city was

divided to three levels; high, middle and low. Then from each region 2 or 3 nurseries and kindergartens were selected. Depending upon the number of children in each kindergarten samples were prepared. Welfare and parental consent was obtained for each nursery. Parasite-specific method of Graham and scotch tape was used for the detection of (3, 12). Teaching points for test and packed slides were given to parents. Two slides with attached tape were delivered for each child. Mothers were advised, two days, once in the morning before defecation, 3-4 cm from the tape attached to the baby anal area for one minute. Then it is removed and attach on the slide, and the slides packed in same day for delivery to the nursery. Samples were examined in the reference laboratory at parasitology of Kermanshah University of Medical Sciences. For searching parasites by light microscopy using objective lenses 10 and 40 (1). Five samples were excluded due to sampling error by parents. To determine the relationship between infection and different variables chi-square test was used. Data were analyzed by using SPSS version 18.

## 3. RESULTS AND DISCUSSION

In this study, 95 children were observed from kindergartens in Kermanshah. 49.5% were female and 50.5% were male. In 14.7% of the children, oxyuriasis (pinworm) was diagnosed. 19% of children who had a positive test had experienced this disease one or more times. In total, 13.7% were infected for the first time. Among boys and girls 18.8% and 10.6% had positive tests respectively. Significant relationship between gender and oxyuriasis where observed ( $P = 0.02$ ). 32.6% of children who observed good personal hygiene. 54.7% of children who observed moderate personal hygiene and 12.7% were in the poor level of personal hygiene. Personal hygiene in girls was more than boys. But the difference was not statistically significant. 5.3% of all of these children were already sometimes afflicted with this disease. Among these children, 7% had sucking habits, 14.3% had itching symptoms and 57% had sign of fatigue. 24.2% of the studied children were from families with high income, 51.6% of them were from middle income and 24.2% had low-income family. There was no relationship between income and Oxyuriasis. Most positive tests (60%) were observed in children whose fathers were employed. The relationship between father job and Oxyuriasis were statistically significant ( $p = 0.03$ ). Most positive tests (57.1%) were observed in children whose mothers were

employed. 42.9% of mothers were housewives. This difference was statistically significant ( $p = 0.008$ ). The highest percentages of positive cases (73.6%) were observed in children whose fathers were undergraduate education. Father's education was no significantly associated with oxyuriasis. This study showed that parents' jobs affect oxyuriasis disease. Descriptive variables are shown in a table (Table 1).

| Variables                 | Options                 | Prevalance |                     |         |                     |
|---------------------------|-------------------------|------------|---------------------|---------|---------------------|
|                           |                         | Total (95) | Positive cases (14) | Percent | Negative cases (81) |
| <b>Fathers Job</b>        | Self-Employed           | 38         | 3                   | 40      | 40                  |
|                           | Employee                | 57         | 11                  | 60      | 41                  |
| <b>Economic Status</b>    | Good                    | 23         | 4                   | 24.2    | 21                  |
|                           | Middle                  | 49         | 4                   | 51.6    | 20                  |
|                           | Bad                     | 23         | 6                   | 24.2    | 40                  |
| <b>Fathers Ejuication</b> | Diploma and Lower       | 16         | 9                   | 16.8    | 15                  |
|                           | Technician and Bachelor | 70         | 3                   | 72.7    | 29                  |
|                           | MSc and Higher          | 9          | 2                   | 9.5     | 36                  |
|                           | Diploma and Lower       | 21         | 5                   | 22.2    | 17                  |
| <b>Mothers Ejuication</b> | Technician and Bachelor | 65         | 7                   | 68.4    | 39                  |
|                           | MSc and Higher          | 9          | 2                   | 9.4     | 25                  |
|                           | Diploma and Lower       | 21         | 5                   | 22.2    | 17                  |
| <b>Children Age Group</b> | One year                | 4          | 3                   | 4.2     | 18                  |
|                           | Two years               | 10         | 5                   | 10.5    | 8                   |
|                           | Three years             | 18         | 2                   | 18.9    | 16                  |
|                           | Four years              | 20         | 2                   | 21.1    | 14                  |
|                           | Five years              | 18         | 1                   | 18.9    | 25                  |
|                           | Six years               | 25         | 1                   | 26.4    | 0                   |
| <b>Living Area</b>        | High                    | 30         | 3                   | 31.6    | 28                  |
|                           | Middle                  | 53         | 4                   | 55.8    | 32                  |
|                           | Low                     | 12         | 7                   | 12.6    | 21                  |

Table 1. Prevalence of oxyuriasis based on some variables in Kermanshah city nurseries

The study findings show that the patients having a family history status is not an indication for the disease. The result of individual and family health status as a major factor in causing the disease has been introduced. Living in determining disease status can now be oxyuriasis (Table 2).

Table 2. Family history Oxyuriasis

| Family history of pollution | Negative cases (81) | Positive cases(14) |
|-----------------------------|---------------------|--------------------|
| Year 2013-14                | 0                   | 2                  |

| Before 3013 | 11 | 8  |
|-------------|----|----|
| Total       | 11 | 10 |

Oxyuriasis is one of the parasitic diseases of childhood. It has been reported that 18 million people are infected to Oxyure in Canada and America. The infection rates are from 3% to 80%. In the present study all areas were examined, whereas previous studies emphasized the poor location and high population so that the results of these studies are consistent with our findings (1). Based on the results obtained in the present study, the prevalence of oxyure among children in Kermanshah city kindergartens was 14.7%. In studies conducted in Yasooj and Oruma it has been reported that prevalence of oxyure was 37.64% and 9%, respectively (9, 13). A study conducted in Korea shown that Oxyuriasis in nursery children was 9.2% (14). High infected levels because of parents busy life and paying less attention to children's health and also lack commitment of kindergarten teachers to this issue. It can be concluded that if children live in impoverished areas, but parents and educators of kindergarten attend to hygiene, catching is Oxy-uriasis simply not possible (15). In the present study, the ox-yuriasis prevalence in boys is more than girls, in a study conducted in Orumie nurseries had shown similar results (16). Girls pay more attention to health and therefore they are less affected to Oxyuriasis. The study found that mothers of infected children experienced Oxyuriasis at least twice. The results are consistent with studies outside Iran (17), So the fear of drug use during pregnancy and fear of expressing shame about oxyuriasis causes the patient not go to the doctor and health centers and can increase the severity of oxyuriasis. Based on the findings, significant relationship between parental occupation and oxyuriasis prevails so that the prevalence of oxyuriasis in children who have parents working is higher than others. This result has been achieved in the study of Valizadeh (9). Attention to personal hygiene by parents can help in reducing the disease.

#### 4. CONCLUSION

Oxyuriasis is not a small disease in children, but it is most common in children. Living in affluent places and privileged feel to be there to believe that the probability of disease is low. Only short-term training at an early age can prevent diseases. In all societies, whether poor or rich, if they do not observe hygiene and care towards children, prevalence of this disease

will increase. Periodic check in public places especially kindergarten could decrease spread of the oxyuriasis disease.

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#### AUTHORS CONTRIBUTION

This work was carried out in collaboration with all the authors.

#### CONFLICT OF INTEREST

Authors have declared that no conflict interests exist.

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