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Predictors of Environmental Awareness Among Preschool Children

Ekhlass Abdulla Ahmed Ismail Elhadidi[1], SalwaAbass Ali Hassan[2], Fatma Mohammed Ahmed[3]

[1] M.Sc. master degree of community Health nursing and teacher at KafrSakr nursing school

[2] Professor of Community Health Nursing, Faculty of Nursing, Zagazig University

[3] Professor of Community Health Nursing, Faculty of Nursing- Zagazig University

Corresponding author

Email ID : ekhlasabdallah564@gmail.com

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ABSTRACT

Background: Today's world is witnessing environmental issues such as Global warming, polluted water, and climate change etc. Those issues have reached alarming levels due to human maltreatment of natural resources. Hereafter, meeting the needs of the present without compromising the ability of future generations to meet their own needs is crucial. Hence, sustainable awareness and environmental literacy at early ages are vital.

The aim of this study was to assess predictors of environmental awareness among preschool children.

Methodology: Descriptive design was used to conduct the study on 80 preschoolers at 5 governmental nursery schools. Tools of data collection: structured questionnaire sheet consists of two parts they are demographic characteristics and environmental awareness

Results: The study revealed that83.7% of preschool children had poor home conditions, totally none (0.0%) of them had environmental awareness.

Conclusion: Preschool children were entirely unaware environmentally**.**

Recommendations: Replicate the study in other settings and on larger sample to permit generalization. Conduct interventional programs to raise preschoolers' awareness about environment.

Keywords: *Environmental issues, Environmental literacy and Preschoolers.*

1. INTRODUCTION

Healthy, clean and pure environment is a precious gift to the humanity. Like many other organisms, humans has to depend, for their life on environment for receiving basic necessities like water, air, food and shelter. Neither the present generation nor the posterity (future generation) has any right to obliterate its wholesomeness or pollute it. The environmental health of a country is, in fact, an indication of the quality of life of the people **(Danielraja, 2019)**.

Environmental problems in today's world, which have reached alarming levels, constitute a serious problem for public health **(Gok and Kilic, 2021)**. Global warming due to CO2 emissions, polluted water, overpopulation and energy use, ocean acidification, land degradation, shrinking forests and climate change put people, wildlife, and the planet at risk. These challenges are happening now and affect daily lives and future **(Robinson, 2025).**

Environmental issues result from a combination of natural causes and human impact. While the Earth's ecosystems are designed to handle certain amounts of natural disturbances (such as forest fires and floods), human activities can create circumstances in which they happen with.

greater frequency or intensity **(McGrath, 2023).** Beyond doubt that humans have a hand in polluting, destroying and disturbing the environment life by mismanage natural sources, including excessive environmental exploitation, resulting in industrial pollution and damage to the ecosystem **(Vijayshankar et al., 2024)**.

The reports of World Health Organization (WHO) indicates that children are uniquely vulnerable to climate and environmental hazards with dangers that increase exponentially as climate change puts people and the planet at ever-increasing risk. Climate and environmental hazards poses a significant threat to children's health because children have

unique metabolism, behavior, physiology and development characteristics **(WHO, 2023).**

On the other hand, early childhood (sometimes called the "preschool years") extends from the end of infancy to about 5 or 6 years. During this period, children become more self-sufficient, develop school-readiness skills (such as learning to follow instructions). The first 5 years of life are critical for the development of cognitive skills and realizing that the world is bigger than their immediate family they start to have more independence, and experiences they have, help growing their personality and beliefs **(Lally and Valentine-French, 2019**).

Formative experiences in family and educational contexts during early childhood can shape children's knowledge, beliefs(awareness) and attitudes later in life, for example, experiences with nature as a young child correlates strongly to caring about the environment as an adult **(Green, 2021)**.

Environmental education to raise awareness on environment can be provided informally by the family, by mass communication, internet, social networks and similar methods of influence **(Ergin, 2019).**

Preschool period education integrates with environment to form awareness towards environment in the future as fundamentals of "willing behavior" **(Gaylord, 2021).**

School nursing is a unique nursing specialty that benefits from a practice framework that aids school nurses in explaining and accomplishing their role. Which has shaped school nursing practice as well as education, leadership, research, and collaboration with stakeholders **(National Association of School Nurses, 2024).** Nurses, due to their frequent interactions with children and families in various settings, are strategically positioned to lead interventions aimed at mitigating these risks. Their crucial role encompasses health promotion, surveillance, education, advocacy, and research, not only safeguarding children from immediate health threats but also fostering sustainable practices and environmental literacy that can influence lifelong behaviors **(Butterfield et al., 2019).**

2. AIM OF THE STUDY

This study aimed to assess predictors of environmental awareness among preschool children.

3. SUBJECTS AND METHOD

Design: Descriptive study design was utilized.

Setting:

Study was conducted in five nursery schools affiliated to Kafr Sakr city, Sharkia Governorate, Egypt.

Subjects:

The study comprised of 80 governmental nursery school children.

After meeting the following criteria:

Both sexes.

Age from 5 to less than 6 years.

One of their primary care givers acceptance.

Free from mental and physical disability or chronic disease.

Sample size :-

The sample size was calculated by software Epi-infopackage at level of confidence 95%, margin of error 5% and power of test were 80%,assuming average sustainable built environment education among preschool children is low as wind turbine 25.37 % from 250 **(Ozburak et al., 2018)** preschool children at kafr saqre center**,** and the least percentage of improvement after the program will be 10% then the sample should include **70** children in addition to **10%** dropout, final sample size will be **80** children.

Tools and technique of data collection:

Data were collected through the following tool:

Tool (I): Structured Interview Questionnaire Sheet

This tool was prepared by the researcher in Arabic language and consisted of following two parts:

Part I: Demographic characteristics and home environment of studied preschool children were classified based on **Fahmy et al. (2015)** Such as, age, sex, residence, birth order, parent level of education, monthly family income, availability of clean water, electricity and safe waste disposal.

Part II: Environmental Awareness of Preschool Children. This part developed by the researchers in the light of the current

related literature and guided by other related studies as **Soydan and Samur (2017).**Which consisted of 16 questions, it was applied to each child individually by using set of colored pictures(cards) shown to children about some environmental actions as concept of environment, pesticides, composting, recycling …… etc.

4. SCORING SYSTEM:-

For environmental awareness, items the response were scored (1) if correct answer, and (0) for incorrect answer and don't know. For each part the score of items were summed up and converted into percentage. The scores were converted to qualitative variable and the total divided by the corresponding number of items, giving a mean score. These were converted into percentage scores. The child knowledge and awareness considered unsatisfactory if percent scores were less 50%, and satisfactory if 50 % or more.

5. VALIDITY AND RELIABILITY OF TOOLS:-

The tools were revised by a panel of three experts in the fields of Community Health Nursing, geriatric nursing, and Pediatric Nursing, at Faculty of Nursing, Zagazig University who conducted face and content validity of all items of the study tools. These experts assessed the tools for clarity, relevance, application, and comprehensiveness. There were no recommended modifications. Reliability of awareness was 0.983

6. PILOT STUDY:-

A pilot study was carried out on eight preschoolers representing about 10 % of the total studied sample, to test the feasibility, clarity, comprehensiveness and applicability of the study tools. Also, to estimate the necessary time for completion of the data collection tools sheet. All participants received clear clarification about the study purpose. The children enrolled in the pilot were included in the main study sample as there was no modifications done.

7. FIELD OF WORK:-

Once permission was granted to proceed with the study, the researcher started to prepare a schedule for collecting the data. The fieldwork was carried out within the period of four months, starting from the beginning of October 2024 to the end of January 2025. The researcher allocated two days weekly, Tuesday and Thursday from 9 am to 1 pm.

Regarding the recruitment of children in the study, due to the high rate of absence in nursery schools, and accordingly, the school used to gather children in one class, regardless of whether they belonged to which educational class.

An equal number of children were selected from each nursery school and the children were selected from within the classes randomly and in proportion to the size of the sample and the specifications required for it.

8. ETHICAL CONSIDERATION:-

The study proposal was approved by the Research Ethics Committee (REC) and the Postgraduate Committee of the Faculty of Nursing at Zagazig University in March 2023 **(cod: M.D. Zu. NUR/ 132/13/2023)** Informed consent was obtained verbally from child's primary care giver after full explanation of the aim and objectives of the study as well as its procedures. They were informed that their involvement in this study was voluntary. Also, they have rights to refuse or withdraw their children at any time of data collection interviews as well as the confidentiality and anonymity of the collected data. They were also assured that any obtained information would be used only for research purposes.

9. STATISTICAL ANALYSIS:-

The SPSS 20.0 statistical package was used for data management and statistical analysis. Descriptive statistics as frequencies and percentages were used for categorical variables and means and standard deviations and medians for quantitative ones. Gutmann-split half coefficient analysis was used to test the reliability of the scales. Spearman rank correlation analysis was applied to assess the inter-relationships among quantitative and ranked variables. Statistical significance was considered at p-value <0.05.

10. RESULTS

Regarding socio-demographic characteristics of preschool children, **Table 1** revealed that70% of the studied children aged 5-<6 years with Mean age 5.8±0.4. Also, 60.0 % of them were females, 87.5% lived in urban areas, concerning parents' education, 43.8% of mothers had university education compared to 27.5% of fathers. Regarding parents' work, 70% of mothers worked while 23.7% of fathers were farmers, and 23.7% of them worked as professionals. Moreover, 33.8% of parents had sufficient income.

Considering home environmental conditions of the studied preschool children, **Table 2**, 92.5 % had sewage system, 87.5% had toilets and 86.3% had clean water supply, also only 18.8% had waste disposal. On other hand, 55% had computers. The crowding index was 27.5% (more than two per one room).

Regarding total home environment condition, **figure 1** depicts that 83.7% of preschool children had poor home conditions.

Regarding environmental awareness of preschool children, **Table 3** indicates that preschool children's awareness mainly about Health behaviors about environment (37.5%) followed by plantation (3.8%) and waste management (2.5%).

Regarding total environmental awareness, **figure 2** sketches that totally, none (0.0%) of them had environmental awareness.

Table 4 points to a statically significant positive correlation between child awareness, and home crowding index (P=0,05).

11. DISCUSSION

The United Nations Children's Fund (UNICEF)reported that around 1 billion children, nearly half of the world's 2.2 billion children, now face extreme risks to their ability to survive, grow, and thrive due to the triple planetary crisis of climate change, environmental pollution, and biodiversity loss. This situation has put virtually every child in the world at risk **(UNICEF, 2024).** In this context, many note that protecting and restoring the global environment will require transformative changes in human production and consumption-related behaviors, reflecting on individual choices as well as larger-scale, culturally mediated collective action **(Ardoin &Bowers, 2020).**

Recognizing these environmental problems is the first step toward solving them. Everyone can play a role by making small changes in lifestyle or supporting large-scale solutions **(Bryson, 2024).** Hence, the present study aimed to evaluate the effect of nursing intervention on environmental literacy and sustainability awareness among preschool children.

Pertaining to children's age, the current study findings showed that the mean age of the children was 5.8 ± 0.4 years, and more than half of the sample were females, and more than two-thirds belonged to urban areas. This finding is consistent with the results of several studies conducted in Turkey, which reported that more than half of preschool children were females **(Çabuk and İşal, 2023; Duran, 2021; Güvenir** and **Türkmen, 2024)**. Similarly, **Melis et al. (2020)** in Norway demonstrated that half of the studied preschool children were females.

As to mothers' education and work, the current study findings revealed that nearly half of mothers had university education, and more than half were working. This result might be attributed to Egypt's government focus in recent decades on educating women and empowering them to work effectively in society. On the same line, a study conducted by **Biber et al. (2022).** In Turkey showed that more than three-quarters of mothers had university education, and more than half of mothers were working.

Regarding fathers' education and work, the results of the current study revealed that about one-third of fathers had only primary education. More than one-quarter of fathers were farmers, and more than one-quarter had professional jobs. This relatively small percent can be attributed to individual factors that may be played role in hindering those fathers from completing their education and hence limited opportunity to catch job. This finding disagree with **Çabuk and İşal (2023)** in Turkey, who revealed that more than half of fathers were undergraduates and that more than half had private jobs.

Considering family income, the results of the current study showed that about one-third of families had sufficient income. This might be attributed to low educational level of fathers, who are the economic foundation and support of family, which reduces the chances of good jobs and thus a high salary or income. This finding contrast with **Halmatovand Ata (2017)** In India, who demonstrated that more than half of parents received only a minimum salary.

Considering child residence, the findings of current study reported that the majority of children lived in urban areas**(Table 1).**This finding is consistent with the results of **Simsar (2021)** in Turkey, who reported that more than half of preschool children lived in urban areas.

In terms of home sanitation, the findings of the current study clarified that the majority of homes had a sewage system. However, less than a quarter of the samples reported the presence of waste management **(Table 2)**. This finding may be explained by limited awareness about proper waste management or unavailability of waste collection system. This finding is in agreement with **Singh and Sharma (2023)** In India, where the study results clarified that the majority of the population are unable to discard waste properly because of the unavailability of dust bins nearby. On the same stream, these findings agreed with **Adekanmbi Peter (2022).** In Nigeria, who stated that solid wastes are indiscriminately disposed of outside community by the roadside, public area, incessant burning of refuse. In contrary, **Abdullah et al. (2017)** in Malaysia reported that residents disposed of their waste multiple time weekly as designed by the waste-collecting establishment.

Regarding environmental awareness among studied preschool children, the current findings indicated that children were entirely unaware. One of the reasons might be the limited integration of environmental education within preschool curricula**,** also the attitude that this age is too young to understand such issues**.**

In the same vein, the result of this study is consistent with that of **Samur (2018)** in Turkey, who stated that both the activities included in the preschool education program had positive effects on children's environmental awareness. Similarly, **Halawachy and Himmadi (2024)** In Iraq**,** who noted that the Iraqi preschool educational system for preschool children lacks any support for environmental awareness and sustainability.

In line with this, **Gungor and Kalburan (2022)** In Turkey, who observed that that children's awareness of the concept of an ecological footprint was mostly at the medium level.

This finding contrast with **Tomkuliaková (2024).** In Poland, revealed that preschoolers have environmental awareness, which are essential for the sustainability of life on Earth.

However, **Ozburak et al. (2018)**In Turkey reported that during interviews, children demonstrated insufficient awareness of alternative energy resources such as green roofs, water collection systems in buildings, and solar panels.

12. CONCLUSION

Initially, the majority of children's home environment was ranked as poor. Preschool children were entirely unaware environmentally

13. RECOMMENDATION

Based on the results of this study, the following recommendations were suggested; Replicate the study in other settings and on larger sample to permit for generalization. Conduct interventional programs to raise preschoolers' awareness about environment.

14. ACKNOWLEDGEMENTS

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Table 1: Demographic characteristics of the studied preschool children. (n=80)

characteristics	Frequency	Percent
Age (year)		
5 -< 6 6	56 24	70.0 30.0
Range Mean± SD	5-6 5.8±0.4	
Gender:		
Boy (male) Girl (female)	32 48	40.0 60.0
Residence:		
Urban	70	87.5
Rural	10	12.5
Father education:		
Read/write	7	8.8
Basic(primary prep)	29	36.2
Secondary	22	27.5
university	22	27.5
Mother education:		
Illiterate	1	1.2
Read/write	8	10.0
Basic(primary prep)	4	5.0

Secondary	32	40.0
University	34	43.8
Father job:		
Farmer	19	23.7
Manual worker	14	17.5
Employee	4	5.0
Freelance	10	12.5
Professional	19	23.7
Partisan	14	17.6
Mother job:		
Housewife	24	30.0
Working	56	70.0
Family income:		
Insufficient	8	10.0
Just sufficient	24	30.0
Sufficient	27	33.8
Saving	21	26.2

Table 2: Home environment of the studied preschool children. (n=80)

Items	Frequency	Percent
Home sanitation:		
Water supply	69	86.3
Toilet	70	87.5
Sewage system	74	92.5
Waste disposal	15	18.8
Total home environment:		
Poor (<4)	67	83.8
Good (4)	13	16.3
No. of facilities:		
Range	1-4	
Mean±SD	2.9±0.9	
Median	3.0	
Have home computer:		
No	36	45.0
Yes	44	55.0

Crowding index:		
<2	58	72.5
2+	22	27.5

(**) results are not mutually exclusive.

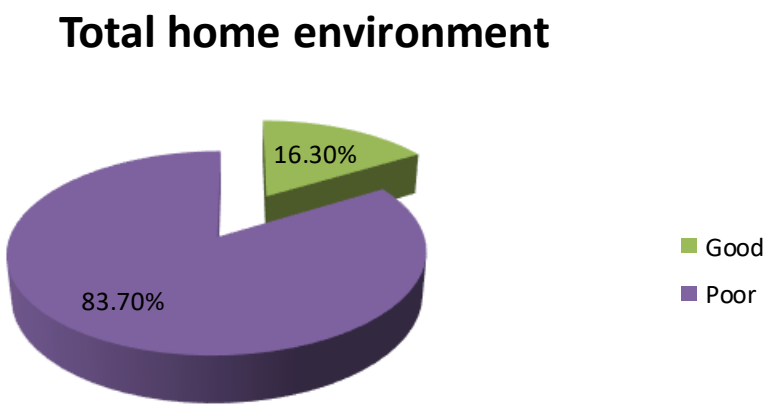

Figure 1: Total home environment conditions among preschool children. (N= 80)

Table 3: Environmental awareness among studied preschool children (n=80)

High (50%+) Environmental awareness:	Time	
	No.	%
Definition	2	2.5
Pollutants	0	0.0
Waste management	2	2.5
Plantation	3	3.8
Health behavior	30	37.5

(*) Statistically significant at p<0.05

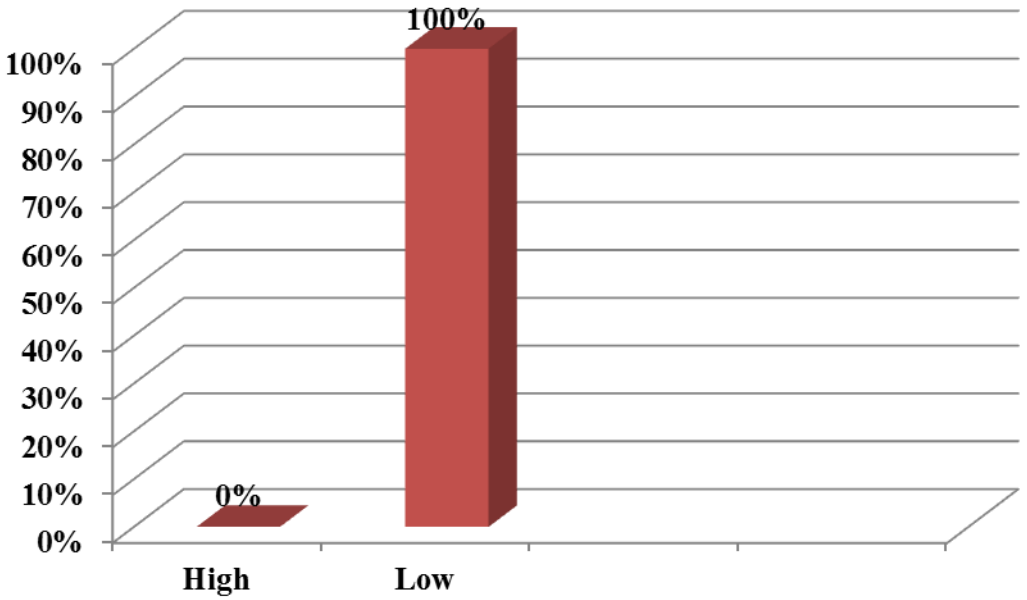

Figure 2:Total environmental awareness score among preschool children. (N= 80)

Table 4: Correlation between children's awareness score and their characteristics (n=80)

Characteristics	Spearman`s rank correlation coefficient awareness
Age	0.083
Father education	0.081
Mother education	0.079
Home environment	0.085
Income	0.174
Crowing index	0.036

(*) Statistically significant at p<0.05 *(**) Statistically significant at p<0.01.*

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