

Mother's Awareness regarding Effect of Indoor Pollution on Child Health

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Abstract

Background: Indoor pollutants a significant impact on children's health. Mothers play a crucial role in ensuring the health and well-being of the children, and mothers' awareness of the effects of indoor pollution on child health is essential. **Aim:** Was to assess the mother's awareness regarding effect of indoor pollution on child health. **Research design:** A Descriptive research design was used to conduct in this study. **Setting:** This study was conducted at Maternal and Child Health Center in Benha City. **Sample:** Simple random sample was used, 392 mothers. **Tools:** Two tools were used **Tool I:** A structure interviewing questionnaire included two parts; **Part I A):** Socio demographic characteristics of mothers. **B):** Health problems of the children. **Part II:** Mother's knowledge about indoor pollution. **Part III:** Mothers reported practices regarding prevention of indoor pollution. **Tool II:** Environmental checklist design to assess home environmental condition of mothers regarding prevention of indoor pollution. **Results:** 65.3% of studied mothers were age range from 20 to less than 30 years old, 44.9% of studied children were suffered from redness of eye, 42.9% of studied children suffered from sensitivity on the chest, 48.3% of studied mothers had poor knowledge level about indoor pollution and 49.0% of studied mothers had unsatisfactory reported practices. **Conclusion:** there were statistically relation between the studied mothers total knowledge score and total reported score. **Recommendations:** Health educational program about information and proper practices regarding indoor pollution should be developed and implemented for mothers.

Keywords: Mothers awareness, Child health, and Indoor pollution.

Introduction :

Indoor environment is a mixture of physical, chemical, and biological pollutants that originate from outdoor air, building and decorative materials, combustion appliances, and human activity. Exposure to indoor environmental pollutants in the general population is ubiquitous, multiple, and chronic. The routes of exposure and penetration into the body are ingestion, inhalation, dermal, mucosal, and trans placental (Rosofsky et al., 2019).

Indoor pollution is a high environment risk. Together, contaminated soil, home dust, allergens, Volatile Organic Compounds (VOCs), hazardous household chemicals, indoor pollution, tobacco smoke, and other pollutants pose. Exposure to these substances that would not be tolerated on in the outdoor environment, because most of people aren't aware of the risks. Ingestion, inhalation and contact with home dust can be primary routes of exposure for small children to pesticides, and allergens (Sayed et al., 2020).

Indoor pollution sources are broadly categorized as either biological such as (allergens, molds, viruses, bacteria), chemical such as (fumes from cleaning products, paints, permanents), or physical such as (particulate matter radon, asbestos fibers). In developed nations, risk factors shift to biological pollutants, environmental tobacco smoke, VOC, from building materials/furnishings and poor ventilation. Indoor pollution are associated with increased asthma incidence, symptoms and severity in young children (**Chen et al., 2023**).

Children exposure to indoor pollutants may also have long-term developmental effects on lung function and increased risks of noncommunicable diseases later in life (**Environment Protection Agency, 2019**). Indoor pollutants can be emitted from materials, building equipment and systems, or activities of building occupants (**United States Environment Protection Agency et al., 2019**). Levels of indoor air pollutants can be 2-5 times higher than outdoor levels and chronic exposure poses health risks like respiratory infections, allergies, asthma, and cancer (**Siegel et al., 2023**).

Indoor pollution significant effects on child health, as children are often more vulnerable to the harmful impacts of pollutants due to the developing respiratory and immune systems. Respiratory problems due to exposure to indoor pollutants such as VOC, Particular Matter(PM), and tobacco smoke can increase the risk of respiratory problems in children. These pollutants can irritate the airways, leading to symptoms like coughing, wheezing, bronchitis, and asthma exacerbations. Long-term exposure may contribute to the development of respiratory conditions (**WHO, 2023**).

Mothers, as primary caregivers, play a crucial role in maintaining a safe and healthy environment for the children. Recognizing the potential dangers of indoor pollution, mothers are increasingly becoming aware of the various sources and effects of indoor pollutant. Mothers are increasingly aware of the dangers posed by indoor pollution and are taking proactive steps to mitigate its impact on their families. Their awareness, combined with access to information and support, plays a vital role in creating healthier indoor environments and safeguarding the health of future generations (**Smith & Johnson 2022**).

Community Health Nurses (CHNs) play a significant role in addressing indoor pollution and promoting a healthy indoor environment. CHNs responsibilities include education, assessment, and intervention to mitigate the risks associated with indoor pollution. CHNs instruct the mother about health effect of indoor pollution. CHNs increase mothers awarenes about prevention of indoor pollution as education mothers about risk of indoor pollution and different ways of reducing exposure with better kitchen management and protection of children at home (**WHO, 2023**).

Significance of study:

Indoor pollution from domestic solid fuel use was responsible for over 6,000 premature child deaths annually in Egypt, primarily due to pneumonia. Respiratory diseases were found to be the leading cause of mortality in Egyptian children under 5 years (**Rahim et al., 2017**).

Indoor pollution is a very dangerous thing because indoor is more concentrated with pollutants than outdoor. It's estimated that 2.2 million deaths each year due to indoor pollution in Egypt (**Petrick et al., 2018**).

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Aim of the study:

The aim of study was to assess the mother's awareness regarding effect of indoor pollution on child health.

Research question:

1. What are the child problems related to indoor pollution?
2. What is the mother's knowledge regarding indoor pollution?
3. What are mother's practices regarding prevention of indoor pollution?
4. Is there a relation between knowledge and practice of mothers regarding indoor pollution?
5. Is there a relation between socio demographic characteristics of mothers and their knowledge and practice regarding indoor pollution?

Research design:

Descriptive research design was used in carrying out the study.

Setting:

This study was conducted at Maternal and Child Health Center in Benha City.

Sampling:

Simple random sample was used in this study. The number of mothers attended to previously mentioned setting in the last year were 3900.

Sample size is = 392. They selected according to the following criteria: Mothers their children's age from 1-5 years old.

Tools of data collection:

Two tools were used in collection of data in this study:

Tool I: A structured interviewing questionnaire: It was developed by researchers, based on literature review of the current and past available national and international references, related literature about indoor pollution and written in a simple clear Arabic language; it composed of three parts as the following:

First part (A): Was concerned with socio demographic characteristics of mothers.

(B): Was concerned with health problems of the children.

Second part: Was concerned with knowledge of mothers about indoor pollution.

scoring system:

The scoring system of studied patients' knowledge was calculated as follows: (2) score for a correct and complete answer, (1) score for a correct and incomplete answer, and (0) for don't know. For each area of knowledge, the score of items was summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score.

The total score of knowledge were classified as the following:

•Good: When the total score was >75% (> 10 points).

•Average: When the total score was 50 -75 equal (7-10 points).

•Poor: When the total score was <50 (< 7 points).

Third Part: Was concerned with mothers reported practice regarding prevention of indoor pollution adapted from (Jerry et al., 2019).

Scoring system for practices:

The scoring system for mothers reported practices were calculated as (1) score for done and (0) score for not done. The score of items was summed up and the total divided by the number of the items, giving a mean score. These score were converted into a percent score. The total reported practices score = 27 points was considered satisfactory if the score of total reported practices > 60% > 16 points), and while considered unsatisfactory if the score of total reported practices was <60% or less than 16 points.

Tool II: Environmental checklist was design to assess home environmental condition of mothers regarding prevention of indoor pollution.

Scoring system:

The scoring system for mothers home environment were calculated as (1) score for present and (0) score for not present. The score of items was summed up and the total divided by the number of the items, giving a mean score. These score were converted into a percent score. The total environment score = 14 points was considered sanitary environment if the score of total home environment $\geq 60\% \geq 8$ points), and while considered sanitary environment $<60 < 8$ points.

Content validity:

Content validity of the tools was done by five of Faculty Staff Nursing experts from the Community Health specialties they reviewed the tools for clarity, relevance, comprehensiveness, and give their opinion.

Reliability of the tools:

Reliability of the tools was applied by the researcher for testing the internal consistency of the tool s, by administration of the same tools to the same subject under similar condition on one or more occasion. The reliability of the tools were done by Cornbrash's Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by moderate to high reliability of each tool. The internal consistency of knowledge was= 0.759 and practices was = 0.704

Pilot study :

The pilot study was carried out on (8) of mothers who represented 10 % of the total sample size (80). The pilot study was aimed to assess the tool clarity, applicability and time needed to fill each sheet. No modifications were done, so the pilot study sample was included in the total sample.

Ethical consideration:

The study was approved by Scientific Research Ethical Committee at Faculty of Nursing at Benha University. All ethical issues were assured; oral consent has been obtained from the mothers before conducting the interview and gives a brief orientation to the purpose of the study. They also reassured that all information gathered would be confidential and used only for the purpose of the study. No names were required on the form to ensure anonymity and confidentiality. They were also informed about the right to withdraw at any time from the study without giving any reasons.

Field work:

Data were collected at a period of 6 months which started from the beginning October 2022 to the end of march 2023; the study was conducted by the researcher for the studied sample in Maternal Child Health at Benha City. The researcher visited the MCH 2days/week (Sunday, Monday and Wednesday) from 9:00 am to 12:00 pm to collect data. At the beginning of interview; The researcher explained the purpose and importance of the study to the mother and obtained their oral consent, the researcher collect the data from each mother, the average numbers of interviewing mother was between 5-6 mother/ day depending on their response to the interviewer, each mother take about 15-20 minute to fill the sheet depending on their understanding and response.

Statistical analysis:

All data collected were organized, tabulated and analyzed by using Statistical Package for Social Science (SPSS), version (20). Descriptive statistics was first applied (frequency, percentage, and mean \pm SD) then other statistical tests such as Chi square (χ^2). High statistically significant when p - value <0.001 , Significant when p - value < 0.05 and no significant result when p - value > 0.05 .

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Results:

Table (1): Shows that; 65.3% of studied mothers were age range from 20 to less than 30 years old with mean \pm SD 29.54 \pm 5.22, 90.1% of them were married, 55.9% of the studied mothers were intermediate education, 61.7% of them house wife, 66.8% of them were lived in urban area, 60.2% of them had enough monthly income and 57.9% of them had family member number about 4 to 6 member.

Table (2): Reveals that; 44.9% of studied children were suffered from redness of eye, 42.9% of studied children suffered from sensitivity on the chest and 35.5% of them were suffered from hyperthermia. 46.9% of studied children hadn't suffer from skin problems, 41.1% of studied children were suffered from stomach pain, 46.4% of them hadn't suffer from nervous system problems and 64.0% of studied children had suffered from anemia

Figure (1): Demonstrates that, 48.3% of studied mothers had poor knowledge level about indoor pollution, while 34.4% of them had average knowledge level about indoor pollution and 17.3 of them had good knowledge level about indoor pollution.

Figure (2): Demonstrates that; 49.0% of studied mothers had unsatisfactory reported practices level about prevention of indoor pollution, and 51.0% of them had satisfactory reported practices level about indoor pollution.

Figure (3): Shows that, 33.7% of studied mothers had unsanitary home

environment, and 66.3% of them had sanitary home environment.

Table (3): Shows that; there were highly statistically significant relation between the studied mothers total knowledge level and their educational level and occupation ($p < 0.001$), while there was statistically significant relation between the studied mothers total knowledge level and their monthly income ($p < 0.05$), and there were not statistically significance relations between the studied mothers total knowledge level and their age, marital status and place of residence ($p < 0.05$).

Table (4): Shows that; there were highly statistically significant relation between the studied mothers total reported practices level and their marital status and family member number $p \geq .001$, while there were statistically significant relation between the studied mothers total reported practices level and their educational level and monthly income ($p < 0.05$), and while no statistically significant relation between the studied mothers total practices level and their age, occupation, and place of residence ($p \leq 0.05$).

Table (5): Shows that; there were statistically relation between the studied mothers total knowledge score and total reported practices score.

Table (1): Frequency distribution of studied mothers regarding their socio demographic characteristics (n=392).

Socio demographic characteristics	No.	%
Age/years		
<20	12	3.1
20<30	256	65.3
30<40	124	31.6
Mean ±SD	29.54±5.22	
Marital status		
Married	353	90.1
Divorced	39	9.9
Education Level		
Basic education	46	11.7
Intermediate education	219	55.9
Secondary education	115	29.3
University education	12	3.1
Occupation		
Work	150	38.3
House wife	242	61.7
Place of residence		
Rural	130	33.2
Urban	262	66.8
Monthly income		
Enough and save	56	14.3
Enough	236	60.2
Not enough	100	25.5
Family members number		
<4member	142	36.2
4<6 member	227	57.9
>6 member	23	5.9

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Table (2): Frequency distribution of studied children regarding their health problems (n=392).

Health problems	No.	%
*Eye problems		
Redness of eye	176	44.9
Eye discharge	65	16.6
Eye inflammation	46	11.7
Eye swelling	16	4.2
Not suffering from health problems	112	28.6
*Respiratory problems		
Acute bronchitis	14	3.6
Sensitivity on the chest	168	42.9
Chronic cough	8	2.0
Sinusitis	29	7.4
Nose obstruction	20	5.1
Rhinitis	8	2.0
Hyperthermia	139	35.5
Tonsillitis	99	25.3
Cough during using detergents	3	0.8
Cough or difficulty breathing during present the animals	25	6.4
*Skin problems		
Skin sensitivity (skin irritation)	114	29.1
Skin swelling	4	1.0
Skin inflammation	74	18.9
Dryness of the skin	28	7.1
Not suffered from skin problems	184	46.9
*Digestive System problems		
Stomach pain	161	41.1
Nausea/ vomiting	34	8.7
Diarrhea	77	19.6
Constipation	25	6.4
Abdominal distention	47	12.0
Obesity	23	5.9
Under weight than normal(general weakness)	16	4.1
Not suffered from digestive system problems	37	9.4
*Nervous system problems		
Headache	36	9.2
Not sleeping quietly	79	20.2
Loss of concentration	139	35.5
Not suffered from nervous system problems	182	46.4
*Circulatory system problems		
Increase heart rate	16	4.1
Decrease heart rate	8	2.0
Anemia	251	64.0
Fatigue and dizziness	89	21.9
Not suffered from circulatory system problems	43	11.0

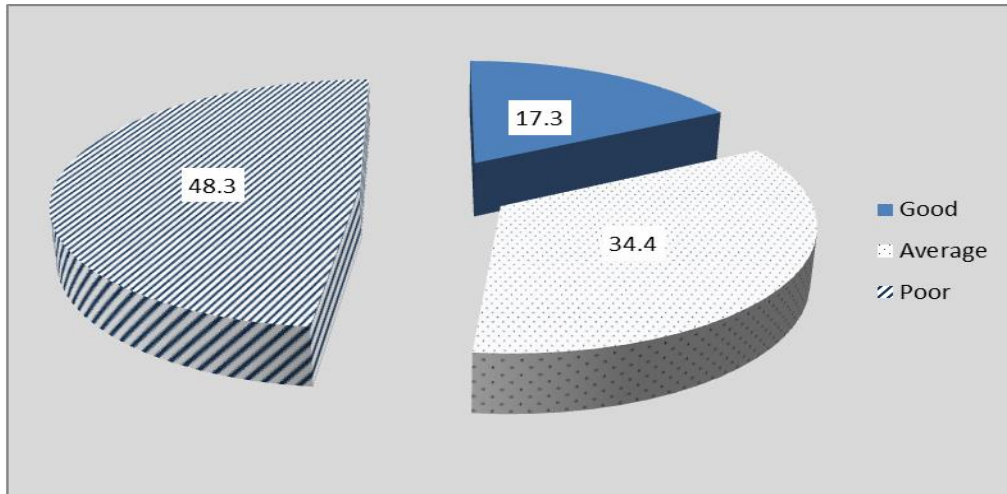


Figure (1): Percentage distribution of studied mothers' total knowledge level regarding indoor pollution (n=392).

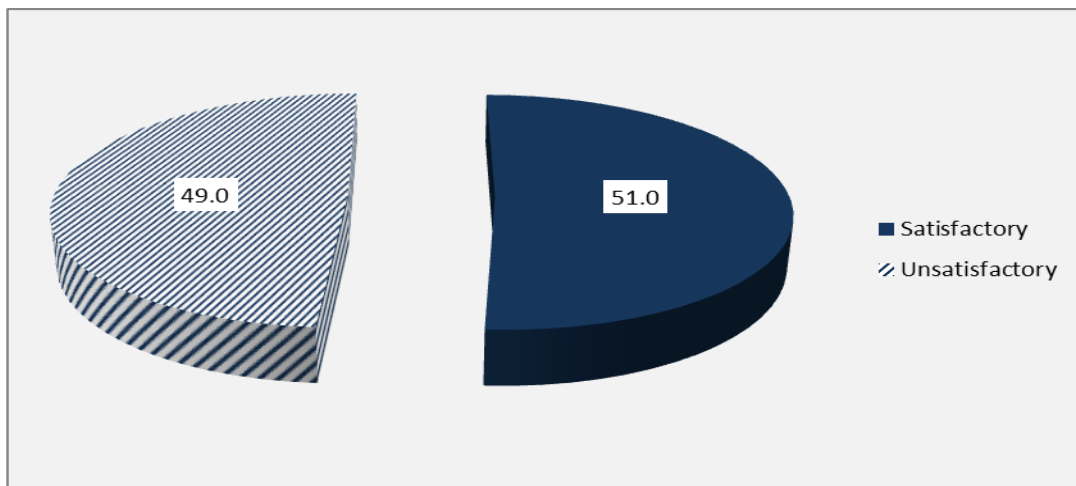


Figure (2): Percentage distribution of studied mothers regarding their total reported practices level (n=392).

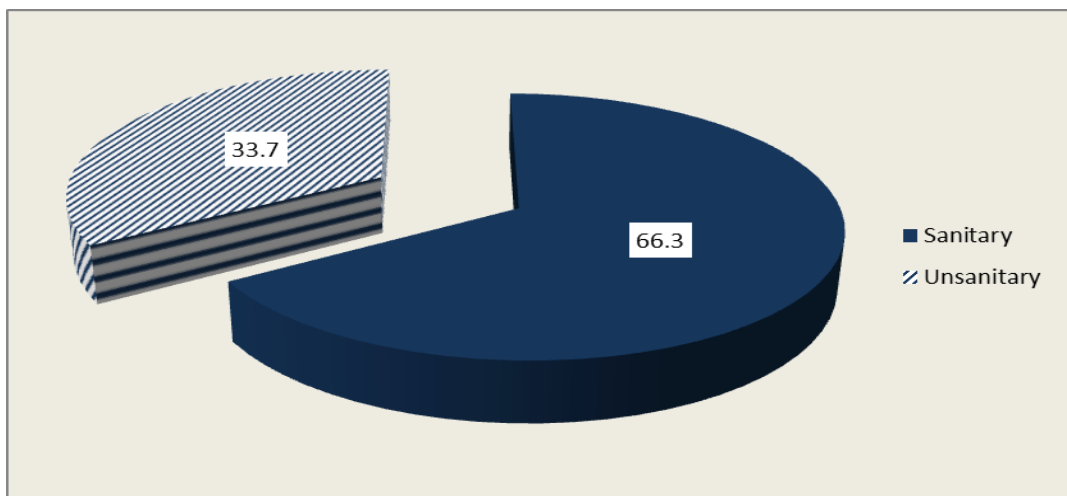


Figure (3): Percentage distribution of studied mothers regarding their total home environmental sanitation (n=392).

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Table (3): Statistically relation between socio demographic characteristics of studied mothers and their total knowledge level (n=392).

Socio demographic characteristics	Total Knowledge level						X ²	P value
	Poor (n=189)		Average (n=135)		Good (n=68)			
	No.	%	No.	%	No.	%		
Age/Years								
<20	9	4.8	3	2.2	0	0.0	5.503	0.239
20-<30	117	61.9	90	66.7	49	72.1		
30-<40	63	33.3	42	31.1	19	27.9		
Marital status								
Married	166	87.8	125	92.6	62	91.2	2.109	0.348
Divorced	23	12.2	10	7.4	6	8.8		
Education level								
Basic education	24	12.7	21	15.6	1	1.5	44.54	.000**
Intermediate education	107	56.6	75	55.6	37	54.4		
Secondary education	57	30.2	38	28.1	20	29.4		
University education	1	0.5	1	0.7	10	14.7		
Occupation								
Work	90	47.6	46	34.1	14	20.6	16.99	.000**
House wife	99	52.4	89	65.9	54	79.4		
Place of residence								
Rural	71	37.6	38	28.1	21	30.9	3.344	0.188
Urban	118	62.4	97	71.9	47	69.1		
Monthly income								
Enough and save	23	12.2	28	20.7	5	7.4	14.588	.006*
Just enough	109	57.6	75	55.6	52	76.4		
Not enough	57	30.2	32	23.7	11	16.2		

Table (4): Statistically relation between socio demographic characteristics of studied mothers and their total reported practices level (n= 392).

Socio demographic characteristic	Total reported Practice				X ²	P value
	Unsatisfactory (n=192)		Satisfactory (n=200).			
	No.	%	No.	%		
Age /Year						
<20	6	3.1	6	3.0	5.484	0.064
20-<30	136	70.8	120	60.0		
30-<40	50	26.1	74	37.0		
Marital status						
Married	183	95.3	170	85.0	11.628	.001**
Divorced	9	4.7	30	15.0		
Education level						
Basic education	28	14.6	18	9.0	11.44	.010*
Intermediate education	111	57.8	108	54.0		
Secondary education	52	27.1	63	31.5		
University education	1	0.5	11	5.5		
Occupation						
Work	69	35.9	81	40.5	0.863	0.353
Not work	123	64.1	119	59.5		
Place of residence						
Rural	72	37.5	58	29.0	3.193	0.074
Urban	120	62.5	142	71.0		
Monthly income						
Enough and save	31	16.1	25	12.5	9.154	.010*
Just enough	125	65.1	111	55.5		
Not enough	36	18.8	64	32.0		
Family member number						
<4 member	52	27.1	90	45.0	13.85	.001**
4-<6 member	126	65.6	101	50.5		
≥6 member	14	7.3	9	4.5		

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Table (5): Statistically relation between the studied mothers total knowledge score and total reported practices score (n = 392).

Item	Total knowledge score						X ²	P-value
	Poor (n=189)		Average (n=135)		Good (n=68)			
	No.	%	No.	%	No.	%		
Total practices score								
Unsatisfactory (n=192)	81	42.9	79	58.5	32	47.1	7.851	.020*
Satisfactory (n=200).	108	57.1	56	41.5	36	52.9		

Discussion:

Indoor pollution is a global public health crisis exposure to pollutants threatens the health of all ages worldwide but it affects the most vulnerable groups as children (Sayed et al., 2020). Exposure to indoor environmental pollutants is a public health issue because of the amount of time spent by the entire population in the homes and the wide variety of contaminants present. Indoor environment is a mixture of physical, chemical, and biological pollutants that originate from outdoor air, building and decorative materials, combustion appliances and human activity (Daniel et al., 2020).

Regarding to socio demographic characteristics of the studied mothers, the present study revealed that, two thirds of the studied mothers were age ranged from 20 to less than 30 with mean age 29.54±5.22years .This finding was inconsistent with (Bauomy et al., 2022), they conducted study on effectiveness of home-based educational intervention on community perception of indoor air pollution in Egypt, n=253, and they found that, 56.7% of studied sample were age less than 50 years old with average age 49.0± 12.3. The findings of the present study

revealed that, most of the studied mothers were married. This finding was consistent with Muro et al., (2020), they study about caregivers' level of knowledge on indoor air pollution and acute respiratory infections among under-fives years Makadara, Nairobi County in Kenya, n= 393 mothers and they found that, 84.3% of the caregivers were married women. The findings of the present study revealed that, three fifth of the studied mothers were housewives. This finding was agreed with Bauomy et al., (2022), they reported that, 72.5% of the study sample has been housewives. Also, this result might be attributed to cultures prefer keeping the women in houses without work to take care of the families and children.

The findings of the present study revealed that, more than two thirds of the studied mothers were lived in urban area. This finding was agreed with Castagna et al. (2022), they study entitled "Air pollution and neurodevelopmental skills in preschool and school aged children in Turkey" n=8198, and they found that, 69.7% of mothers were lived in urban area. The findings of the present study revealed that, three fifths of the studied

mothers had enough monthly income. This finding was disagreed with **Shupler et al. (2021)**, they studied women's knowledge about indoor pollution in Nepal n= 120, and they found that 23% of their studied women had monthly income insufficient.

The present study revealed that, more than two fifth of studied children had sensitivity on the chest. This finding was disagreed with **Muro et al. (2020)**, they documented that, 85.4% of studied sample suffered from acute respiratory infections. This finding could be attributed to indoor environments may be due to use of chemical agent most common cause of chest sensitivity among children below five years.

The present study revealed that, slightly less than half of the studied mothers had poor knowledge level about indoor pollution. This finding was agreed with **Muro et al. (2020)**, they found the studied that, 54.1% of their participants had very low knowledge level about indoor pollution. On the other hands this finding inconsistent with **Swikriti et al. (2022)**, they study about women's knowledge about indoor air pollution in Nepal, n=196, and they found that, 90% of studied mother had good knowledge about indoor pollution. This might be due to low level of education that affects their knowledge, only 3.1% of studied mother had university education.

Regarding to mother's total reported practices, the findings of the present study revealed that, slightly less than half of studied mothers had unsatisfactory reported practices level regarding indoor pollution. This finding was agreed with **Sayed et al., (2020)**, they study about mothers' awareness about indoor pollution and child health problems in Egypt, n= 90, and they found that, 61.4% of the studied mothers had inadequate practices about indoor pollution. This might be due to lack of mother's knowledge about indoor

pollution.

Regarding to total home environmental sanitation of studied mothers, the present study revealed that, two thirds of studied mothers had sanitary home environment. This finding was disagreed with **Svan et al. (2020)**, This study conducted about perceptions, knowledge, and practices concerning indoor pollution of parents in Britany, in France, n=554, and they found that, 2.5% of their studied sample had professional environment.

The findings of the present study revealed that, there were no statistically significant relation between the studied mother's total knowledge level and their age, and place of residence. They finding was agreed with **Daniel et al. (2020)**, they found that, there were no significant differences between knowledge level of mothers age and place of residence.

Concerning to relation between socio demographic characteristics of studied mothers and their total reported practices level, the findings of the present study revealed that, there was a statistical relation between mothers' total reported practices and their educational level. This finding was agreed with **Montuori et al. (2023)**, they found that, statistically significant relation between studied sample reported practices and their education level. On the other hand, this finding was inconsistent with **Unni et al. (2022)**, they found that, there was statistically relation between studied sample practices and their occupation. This might be due to level of education reflect on the mothers' practices.

The findings of the present study revealed that, there was a statistically significant relation between mothers' total knowledge score and total practices score. This finding was consistent with **Sayed et al. (2020)**, they found that, there was a statistically significant correlation between mothers' total knowledge

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score and total practice level. On the opposite direction, this finding was disagreed with **Montuori et al. (2023)**, they found that, there weren't statistically significant correlated between studied sample knowledge and their practices.

Conclusion:

More than two fifths of studied children suffered from redness of eye and sensitivity on the chest. Less than half of study mothers had poor knowledge level about indoor pollution. While more than one thirds of them had average knowledge level about indoor pollution, less than one fifths of them had good knowledge level about indoor pollution. Less than half of studied mothers had unsatisfactory reported practices level about prevention of indoor pollution while more than half of them had satisfactory reported practices level about prevention of indoor pollution. There was a highly statistically significant relation between the studied mother's total knowledge and their educational level and occupation, there were highly statistically significant relation between studied mothers, total reported practices level and their marital status and family member number. There were statistically relation between the studied mothers total knowledge score and total reported score.

Recommendations:

-Health educational program about information and proper practices regarding indoor pollution should be developed and implemented for mothers .

-Illustrated simplified booklet should be available at all out- patient clinics at Maternal and Child Health center in Benha City including healthy practices about indoor pollution.

-Further studies about prevention of indoor pollution on a large probability sample from different geographical areas to attain more generalizable results.

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وعي الأمهات عن التلوث الداخلي وتأثيره علي صحة الطفل

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يشكل التلوث الداخلي، وخاصة الناتج عن حرق الوقود الصلب مثل الخشب والروث والفحم لأغراض الطهي والتدفئة، تهديدا صحيا كبيرا علي صحة الاطفال في البلدان النامية.تهدف هذه الدراسة الي تقييم وعي الامهات عن التلوث الداخلي وتأثيره علي صحة الطفل. وتم استخدام تصميم بحث وصفي في لتنفيذ هذه الدراسة. وقد أجريت هذه الدراسة في المركز الطبي لصحة الأم والطفل بمدينة بنها. تم استخدام عينة عشوائية بسيطة في هذه الدراسة. حيث ان العدد الكلي للأمهات المترددن علي المركز الطبي لصحة الام والطفل بمدينة بنها في العام الماضي حوالي3900. وشملت العينة 392. تم اختيارهن وفق المعايير التالية: عمر الأطفال يتراوح من 1-5 سنوات. وقد اظهرت الدراسة ان أكثر من خمسي الأطفال يعانون من احمرار العين وحساسية في الصدر. أقل من نصف الأمهات لديهن مستوى معلومات ضعيفة عن التلوث الداخلي وبينما أكثر من ثلث الامهات لديهم مستوى معلومات متوسطة عن التلوث الداخلي، و أقل من خمس الأمهات لديهم مستوى معلومات جيدة عن التلوث الداخلي. أقل من نصف الأمهات كان لديهن مستوى ممارسات غير مرضي عن الوقاية من التلوث الداخلي, بينما كان أكثر من نصف الأمهات لديهن مستوى ممارسات مرضية عن الوقاية من التلوث الداخلي. كان هناك علاقة ذات دلالة إحصائية ايجابية بين معلومات الامهات ومستوى التعليم والمهنة، كما كان هناك علاقة ذات دلالة إحصائية ايجابية بين ممارسات الأمهات والحاله الاجتماعية وعدد أفراد الأسرة. وقد أوصت الدراسة علي ضرورة إعداد برنامج تثقيفي صحي للأمهات حول المعلومات والممارسات السليمة عن التلوث الداخلي وتأثيره علي صحة الطفل.