

## Health Risks among Child Labor in Industrial Workshops

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### Abstract

**Background:** Child labor refers to the employment of children in any work that deprives them of their childhood and interferes with their ability to attend regular school that is mentally, physically, socially or morally dangerous and harmful. **Aim of study:** Was to assess health risks among child labor in industrial workshops. **Research design:** A descriptive design was used to carry out this study. **Setting:** The study was conducted at industrial workshops at: Ezbat Alsouq and Alshmoot road affiliated to Qalubia Governorate. **Sample:** Convenience sample of all children worked in pre mentioned settings, it included 60 children. **Tools:** Two tools were used, **I):** A structured interviewing questionnaire was used to assess: A) Socio- demographic characteristics of working children and their families. B) Work characteristics of working children. C) Children's health risks during last six months. D) Children's knowledge about health risks related to industrial workshops. E) Children's reported practices and safety measures used during work. **II):** Observational checklist for environmental safety and sanitation for industrial workshops. **Results:** 60.0% of the studied children had enlarged tonsils, 86.7% had eye irritation, 33.3 % of them had earache, 53.3% of them had loss of appetite, 66.7% of them had skin infections and 73.3 % of them had pain in their whole body, 88.3% of the studied children exposed to loud noises & sounds and work injuries and 90.0% of them done activities that were inappropriate for the child's physical and mental ability, 8.3% of the children had good total knowledge level, 16.7% had satisfactory total practices level. **Conclusion:** There were a highly statistically significant relation between the studied children's total level of knowledge and practices regarding health risks. **Recommendations:** Training programs should be provided for children in labor about health risks.

**Key words:** Child labor, Health risks, Industrial workshops.

### Introduction

Child labor is the activity that prevents the child from living his childhood and harms his healthy development physically, cognitively, and psychologically. The concept of child labor refers to the child's exploitation, taking away the right to health, safety, and education; it is unacceptable, exploitative, and harmful. It is necessary to prohibit child labor with legal regulations and to ensure that this prohibition is implemented with the help of essential monitoring,

inspections, and sanctions (Pattnaik et al., 2020).

Child labor in small industrial shops is very hard especially for younger age and they are subjected to higher levels of physical and mental stressors at work compared to non- working children and adults that performing the same work. These will result in short and long-term health complications; and it will have a negative impact on quality-of-life Legislations should be implemented to protect them (Ahmed et al., 2022).

Child labor is seen as a major social problem in the society. This problem is a global problem that is linked to poverty, limited education, gender, equality, and various health issues. Child labor is caused by family economic responsibilities and social impacts. The effectiveness of measures against child labor is also low. Child labor has a number of negative consequences on young workers they are exposed to physical harm in their workplace, such as physical injuries and illness, as well as psychological damage such as insomnia and memory loss (Munir et al., 2022).

Working children experience physical hazards such as heavy work, in appropriate postures, in addition to extreme heat or cold exposures, chemical, ergonomic, and biological exposures. They experience several health problems including musculoskeletal (MS) disorders and body pain. The risk of MS disorders in child workers is due to tasks characterized by heavy lifting, forceful muscle exertions, and inappropriate postures as well as using poorly designed work equipment. Children working in the fields of construction, manufacturing, retail, and services develop several MS disorders including back, wrist or hand, neck, joint, and shoulder pain (Habib et al., 2020).

Nurses can play a vital role in the assessment of conditions in the formal and informal places to help in improving working conditions. Workplaces offer an entry point to offer vital health knowledge or services. Both formal and informal workplaces are important settings to be considered as sites for programming because each offers opportunities to reach young people. Informal workplaces are particularly important to be considered because they may be the only point of contact with out-of-school or homeless young people who otherwise are difficult to reach (Radwan, 2018).

### **Significance of the study:**

Child labor has dangerous effects at the near and far levels, and given that this phenomenon is in a noticeable increase without planning and organizing, as the National Survey on the phenomenon of child labor in Egypt has shown that there is a continuous increase in the number of children working, and their percentage in 2018 for the age group (less than 18 years) 30.6 million children (26.4% of the total population), and the number of male children is 15.8 million children (18.9%), and the number of females is 14.7 million girls (17.5%). The highest percentage of working children in the age group (15 - 17 years old) 88.9%, the percentage of males was more than females (Mahmoud & Mohamed., 2021).

### **Aim of the study:**

This study aims to assess health risks among child labor in industrial workshops.

### **Research questions:**

- What are health risks of the children related to their work in industrial workshops at last six months?
- What is the studied children's knowledge regarding health risks related to working at industrial workshops?
- What are the studied children's reported practices regarding prevention of health risks related to working at industrial workshops?
- Is there a relation between knowledge and practices of the studied children regarding health risks related to working at industrial workshops?

### **Subjects and method:**

The aim of this study was to assess health risks among child labor in industrial workshops.

### **Setting:**

The study was conducted at 20 workshops in Qaliobia Governorate, affiliated to Benha, Ezbat Alsouq and Alshmoot road. A descriptive study design was used to conduct this study. Convenient sample of all children working in

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pre mentioned settings were chosen in the study including 60child.

### **Tool of data collection:**

#### **Two tools were used for data collection:**

**Tool I:** A structured interviewing questionnaire: It was developed by researchers, based on reviewing related literatures, and written in Arabic language, consisted of five parts to assess the following.

**First part:** Socio-demographic characteristics of working children and their families. It included (14) closed ended questions about age, level of education, number of brothers and sisters, ranking of the child, going to school, parent's age, level of education, occupation, family income, number of rooms and type of living house.

**Second part:** It was concerned with data about work characteristics It included ten closed ended questions about; type of current work, duration of current work, reasons of work, cause to choose the current work, daily hours of work, taking a daily rest, frequency of daily rest, availability of weekly rest and previous work.

**Third part:** To assess children's health risks during last six months it included (11 ) items as: respiratory system problems, eye problems, ear problems, GIT problems, skin problems and musculoskeletal problems) Also, environmental and occupational hazards for children such as physical hazards , chemical hazards, biological hazards, mechanical hazards and psychological, social factors & stress .

**Fourth part:** Concerned with children's knowledge about health risks related to industrial workshops which included ( 14) items as (definition, causes, types, health problems which occur for the children work at industrial workshop as respiratory diseases, eye diseases, ear diseases, GIT diseases, skin diseases and bone diseases), preventive measures for health risk, safety measures in industrial workshop as (definition, causes of accidents and injuries and preventive measures) and source of

children's knowledge(mass media, family, friends/collogue, industrial owner, health team).

### **Scoring system:**

The scoring system for children's knowledge except was calculated as follows: 2 point for complete and correct answer, while 1 point for incomplete and correct answer, and 0 point for do not know or wrong answer.

The total knowledge score = 14 point.

The total knowledge score was considered good if the score > 75% (>21point), while considered average if it equals 50-75% (14-21point), and considered poor if it equals < 50% (<14 point).

**Fifth part:** Concerned with children's reported practices and safety measures used during work. It included (46) items as follows:

**A)** Personal protective measures (7items): eye shield, ear shield, face shield, respiratory protective mask, gloves, blacksmithing forceps, safety shoes).

**B)** General practices for children in industrial workshop include15items as follows: store tools and personal clothing in specific place, wearing specific clothes while working, changing clothes after work and before going home, washing hands and feet after work, wash light tools after work is done, eating while working, going to a place designated for eating, washing hands with soap and water before and after eating, eating a balanced diet, eating sufficient amounts of food, drinking liquids a lot, machines disconnected from power after work is completed, keeping body mechanisms while carrying or pulling heavy objects, follow safe procedures when working with machines, seek medical care in a case of accident or injury.

**C)** Emergency and first aids in case of burning include9items as follows: move the patient from the fire site to a well-ventilated location, gently

remove tight clothing from the affected area, place injured part under running water, clean the burn site with appropriate detergent, use ice to relieve pain by putting it on the burn site, leave the skin bubbles un removed, coat affected part with sterile gasoline gauze, avoid using toothpaste to cover the burn site, use a clean clothes to cover the burn site, call for help if burns are sever .

**D)** In case of fracture include 8items as follows: remove any clothes over the fracture zone, avoid moving the broken organ, note skin color, swelling and bleeding of the skin, use ice cubes to reduce swelling and pain, avoid repairing and restoring the fracture, use a splint or brace to stabilize the fracture, if shock, lower the injured head and raise the foot to up.

**E)** In case of injuries include 7items as follows: calm the injured person and put him in a comfortable position, make the injured part higher than body level, stop any external bleeding by direct pressure, clean the wound with suitable detergent then dry it, observe any foreign object inside the wound, put a sterile bandage on the wound site, move the injured person to hospital if bleeding doesn't stop.

**Scoring system:**

The scoring system for children's reported practices and safety measures used during work was calculated as follows 1point for done and 0 point for not done.

The total practices score =46 steps

The total practices score was considered satisfactory if the score  $\geq 60\%$  ( $\geq 27$ score) and unsatisfactory if it  $< 60\%$  ( $< 27$ score).

**Tool (II):** Observational checklist for environmental safety and sanitation for industrial workshops was adopted from Mahmoud et al., (2021) and included 22 items:

**A)** Work place (5 items): clean, organized, good lighting, good ventilation, availability of personal protective equipment.

**B)** Floor (3 items): safe and free of nails and holes, resistance to slip, passages are clear and free of obstructions.

**C)** Protect from fires (6 items): Firefighting measures are applicable, Fire extinguishers are presented for all types of burns, fire extinguishers are suitable for number, fire extinguishers are placed remarkably, Clearly emergency exist, Proper workplace first aid

**D)** Machines (3 items): Proper position and tidy, Storage area is away from workers, Store chemicals correctly.

**E)** Sanitary facilities (5 items): presented, clean and usable, hand washing tanks, clean, safe water supply, rest and eating places. The total environment score = 22 steps

**Scoring system:**

The scoring system for environmental conditions of industrial workshops was calculated as follows 1point for present and 0 point for not present. The total environmental conditions score was considered sanitary if the score  $\geq 80\%$  ( $\geq 17$  score) and unsanitary if it  $< 80\%$  ( $< 17$  score).

**Content validity**

The tools validity was assessed by 3 members of Faculties staff Nursing experts from the Community Health Nursing Specialists who reviewed the tool for clarity, relevance, comprehensiveness, applicability, and easiness for implementation and according to their opinion minor modification were carried out.

**Content reliability**

The reliability of the developed tools was estimated using Chronbach's  $\alpha$  test to measure the internal consistency of the tools. It was found that the reliability of knowledge was 0.894, reliability of practices was 0.991.

**Ethical consideration:**

All ethical issues were assured; an oral consent has been obtained from children before conducting the interview and given them a brief

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orientation to the purpose of the study. They were also reassured that all information gathered would be treated confidentially and used only for the purpose of the study. The children had the right to withdraw from the study at any time without giving any reasons. The study had not any physical, social or psychological risks. Ethics, values and cultures were respected.

### **Pilot study:**

The pilot study was carried out on 6 workshops who represents 10% of the total of the study subjects. The pilot study was made to assess the tools clarity, applicability and time needed to fill each sheet as well as to identify any possible obstacles that may hinder the data collection. The pilot study was not excluded as no modifications were done.

### **Data collection phase:**

The actual field work was carried out over a period of 6 months from the beginning of January 2022 up to the end of June 2022. Children's consent was obtained before collection of data. The researchers visited the pre-mentioned settings from 9 am to 12.30 pm, two days per week (Sunday and Thursday) to collect the data from the children. The average time needed to fill the tool was around 30- 45 minutes, the average number interviewed children was 2-3 children each time depending on understanding and response of the interviewers. The researchers met the owner of each unit for determining the suitable time to collect the data. The researchers introduced herself to children in the workplace, explained the aim and component of the questionnaires and fill it by herself. The researchers checked each filled questionnaire to ensure its completion.

### **Statistical analysis:**

All data collected were organized, tabulated and analyzed using appropriate statistical test. The data were analyzed by using the Statistical Package for Social Science (SPSS) Version 21, which was applied to calculate

number and percentages for qualitative data and mean  $\pm$  S.D for quantitative data as well as test statistical significance and associations by using chi-square test and correlation test (r) to detect the associations between the variables for (p value).The level of significance:

- Highly significant (HS)  $P \leq 0.001$
- Significant (S)  $p \leq 0.05$
- Not significant (NS)  $P > 0.05$

### **Results:**

**Table (1):** Shows that, 40.0 % of the studied children were aged between 10-<15 years with Mean  $\pm$ SD= (12.00 $\pm$ 3.62), 33.3 % of them had primary education, their number of brothers and sisters were 3 and 4 child. Also, 46.7% of the studied children were the second child in the family and 60.0% of them were going to school.

**Table (2):** Shows that, 26.7% of the studied children worked at Carpentry workshop , Auto repair shop & Marble workshop, 33.3% of them worked at the current work from 24-<36months Mean  $\pm$ SD= (21.73 $\pm$ 10.83) and 86.6% of them worked for helping the family to survive. Also, 53.3% of the studied children worked at the current work due to that don't require a scientific degree and close to their house, 46.7% of them worked 8 hours per day, 86.7% of them took a daily rest, 53.3% of them took once rest per day, 93.3% of them took a weekly rest and 86.7% of them take money from their work and had a previous work.

**Figure (1):** Illustrates that, 85.0% of the studied children exposed to health hazards, while 15.0% of them unexposed to health hazards.

**Figure (2):** Shows that, 8.3% of the studied children had good level of knowledge, 26.7% of them had average level of knowledge, while 65.0% of them had poor level of knowledge about health risks at industrial workshops.

**Figure (3):** Illustrates that, 16.7% of the studied children had satisfactory level of total practices, while, 83.3% of them had unsatisfactory level of total practices about prevention of health risks.

**Figure (4):** Illustrates that, 20.0% of the studied workshops had sanitary

environment, while 80.0% of its had unsanitary environment.

**Table (3):** Clarifies that, there were a highly statistically significant relation between the studied children's total level of knowledge and practices regarding health risks,  $P \leq 0.001$ .

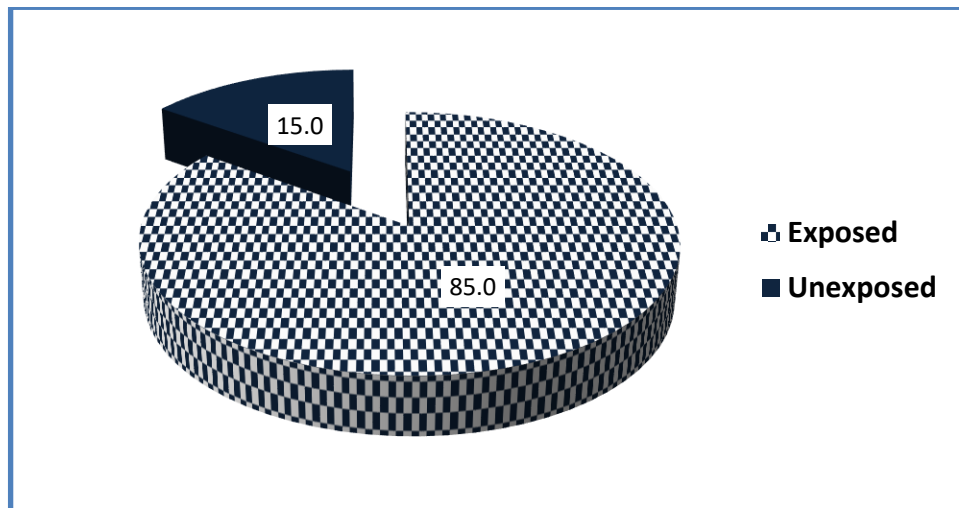
**Table (1): Frequency distribution of the studied children regarding their socio demographic characteristics (n=60).**

Socio demographic characteristics	No.	%
<b>Age</b>		
<10	16	26.7
10-<15	24	40.0
≥15	20	33.3
<b>Mean ±SD</b>	<b>12.00±3.62</b>	
<b>level of education</b>		
Can't read and write	16	26.7
Primary	20	33.3
Preparatory	16	26.7
Secondary education	8	13.3
<b>Number of brothers and sisters</b>		
Two	12	20.0
Three	20	33.3
Four	20	33.3
Five	4	6.7
Six	4	6.7
<b>Ranking of the child</b>		
The first	12	20.0
The second	28	46.7
The third	16	26.7
The fourth	4	6.7
<b>Going to school</b>		
Yes	36	60.0
No	24	40.0

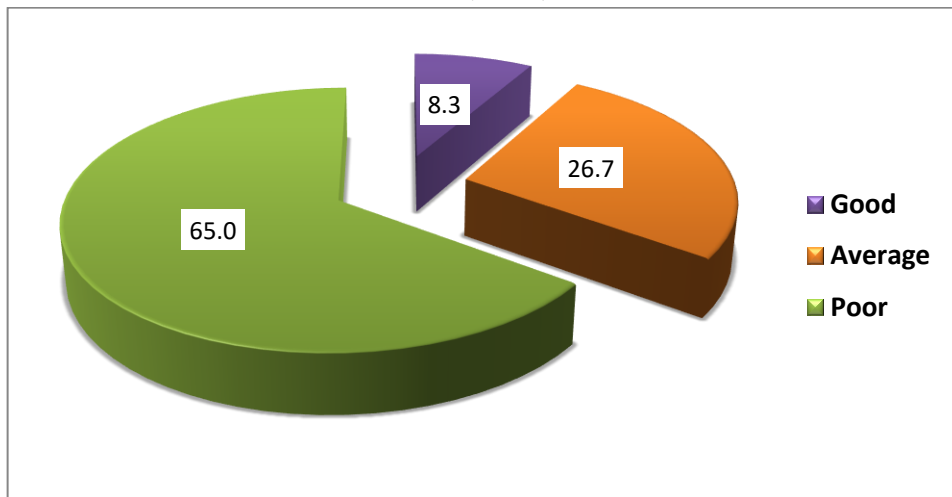
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**Table (2): Frequency distribution of the studied children regarding their work characteristics (n=60).**

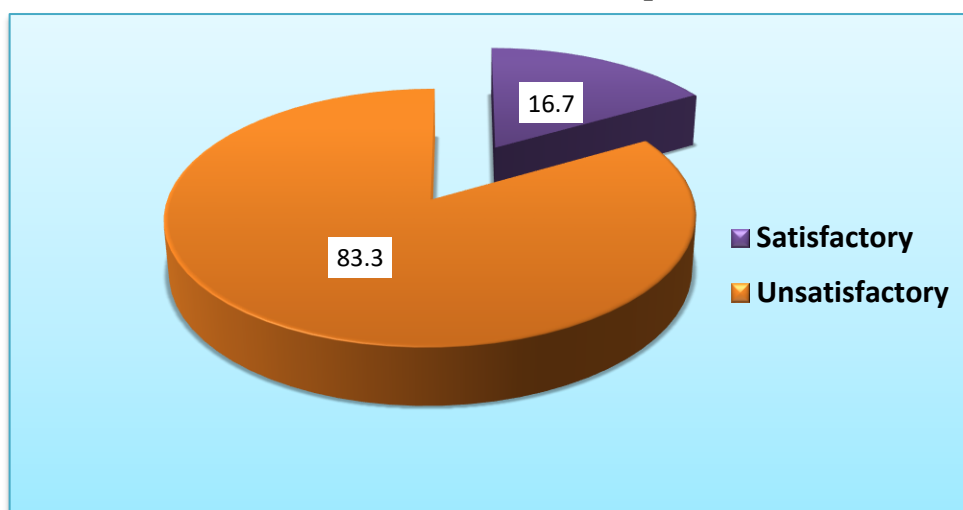
Work characteristics	No.	%
<b>Type of current work</b>		
Carpentry workshop	16	26.7
Auto repair shop	16	26.7
Blacksmith's workshop	12	20.0
Marble workshop	16	26.7
<b>Duration of current work/ month</b>		
<12 month	12	20.0
12-<24	12	20.0
24-<36	20	33.3
36+	16	26.7
<b>Min –Max</b>	5-36	
<b>Mean ± SD</b>	<b>21.73±10.83</b>	
<b>Reasons of work</b>		
Inability to pay school fees	16	26.7
Failed at school	12	20.0
Helping the family to survive	52	86.6
Family problems	16	26.7
<b>Cause to choose the current work*</b>		
Love this work	12	20.0
Don't find another work	20	33.3
Don't require a scientific degree	32	53.3
Work of the father	12	20.0
Work of relatives/friends	8	13.3
Suitable wages	24	40.0
Close to home	32	53.3
<b>Daily hours of work /hours</b>		
4	4	6.7
6	8	13.3
8	28	46.7
More than 8	20	33.3
<b>Taking a daily rest</b>		
Yes	52	86.7
No	8	13.3
<b>Frequency of daily rest</b>		
No rest	4	6.7
1	32	53.3
2	12	20.0
3	12	20.0
<b>Availability of weekly rest</b>		
No	4	6.7
Yes	56	93.3
<b>Take money from work</b>		
Yes	52	86.7
No	8	13.3
<b>Previous work</b>		
Yes	52	86.7
No	9	13.3



**Figure (1): Percentage distribution of the studied children regarding their exposure to health hazards (n=60).**



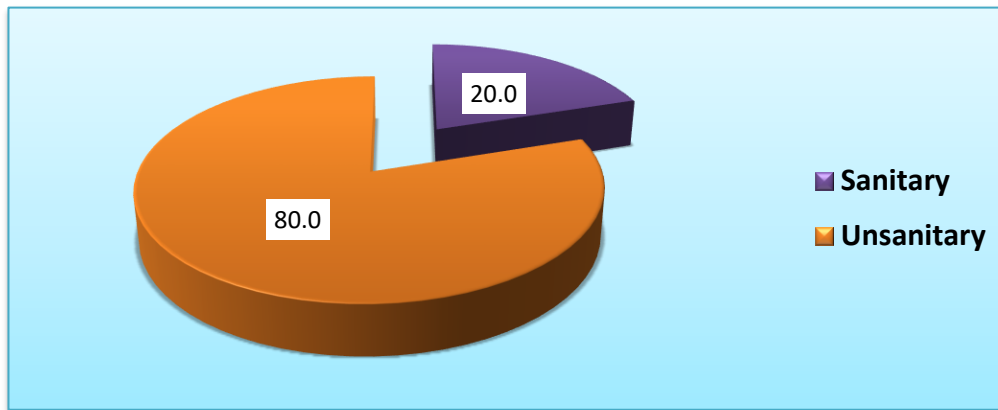
**Figure (2): Percentage distribution of the studied children regarding their total knowledge about health risks at industrial workshops (n=60).**



**Figure (3): Percentage distribution of the studied children regarding their total practices about prevention of health risks (n=60).**



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**Figure (4): Percentage distribution of studied workshops regarding its environmental safety and sanitation (n=20).**

**Table (3): Statistically relation between total knowledge and total practices regarding health risks among studied children (n=60).**

Total knowledge	Total practices				X <sup>2</sup>	p-value
	Unsatisfactory (n=50)		Satisfactory (n=10)			
Poor (n=39)	39	78.0	0	0.0	27.24	0.000**
Average (n=16)	10	20.0	6	60.0		
Good (n=5)	1	2.0	4	40.0		

### Discussion:

Children engaged in labor have poor health status, which could be aggravated by labor. Malnutrition and poor growth were reported to be highly prevalent among working children, the nature of labor has its effects on child's health. Most of the studies adjusted for the daily working hours proved that long working hours have been associated with poorer physical outcomes. The different types and sectors of labor were found to be associated with different health outcomes as well (Ibrahim et al., 2019).

Regarding Socio demographic data of the studied workers, the current study illustrated that more than one third of the studied children were aged between 10 to less than 15 years with mean  $12.00 \pm 3.62$ . This result were supported by Elghazally et al., (2022), "Child labor in car-repair workshops: socio-

demographic data and health hazards" in Egypt (n= 160), and stated that the mean age of the studied children was  $12.39 \pm 2.4$  years old.

In the present study, one third of the studied children had primary education. This result agreed with Pinzón-Rondón et al., (2018), South America, entitled "Wealth, social protection programs, and child labor in Colombia: a cross-sectional study", (n= 4,530) and mentioned that nearly one third (31%) of the studied children had primary education. This is likely due to the deteriorating socio-economic conditions of their families, which compel children to set aside their education and prioritize work opportunities in support of their families.

The current study represented that, one third of the studied children's number of brothers and sisters were 3 and 4 child. Also,

nearly half of the studied children were the second child in the family. This result was consistent with **Simbar et al. , (2019)**, Iran "Hope for the future, attachment relationships, and emotional-behavioral problems in child labor", (n= 50) and found that about one third (34.5%) of the studied children had 3 - 4 brothers and sisters.

Concerning work characteristics of the studied children, the current study illustrated that more than one quarter of the studied children worked at carpentry workshop, auto repair shop & marble workshop. On the other hand, these findings contradicted with **Ahad et al., (2018)**, Bangladesh, "Hazardous working conditions and employers perception regarding child laborer: A study at Sylhet City of Bangladesh", (n= 70) and found that less than one quarter of the studied children (20%) were automobile worker, almost one fifth of them (18%) were rickshaw puller and more than one tenth (13%) were domestic labor. this may because lack of preventive measures and courses that the employers provided to workers. This discrepancy may be due to the difference between the study samples as regard cultural and socioeconomic condition.

The current study showed that one third of studied children worked at the current work from 24 to less than 36 months mean  $21.73 \pm 10.83$  and less than half of them worked 8 hours per day, most of them took a daily rest, more than half of them took once rest per day, most of them took a weekly rest. These findings were similar with a study conducted by **Srivastava, (2019)** India, "Children at work, child labor and modern slavery in India", (n= 3427) and found that nearly half of the studied children (56%) worked 8 hours per day. Also, a study carried out by **Rahman, (2018)** in Bangladesh about "Occupational injuries among children in

Bangladesh", (n= 36242) and reported that most of them (84%) took a daily rest.

The present study revealed that most of the studied children worked for helping the family to survive. Also, more than half of them worked at the current work due to that don't require a scientific degree and close to their house and most of them toke money from their work and had a previous work. These findings agreed with **Adonteng, (2018)** Ghana "Causes of child labor: Perceptions of rural and urban parents in Ghana", (n= 60) and mentioned that most of the studied children (94%) worked due to poverty and for helping their family.

As regard total exposure to health hazards of the studied children, the present study indicated that most of the studied children exposed to health hazards, while less than one fifth of them unexposed to health hazards. This result was in agreement with **Hanvold et al., (2019)** UK about "Occupational safety and health among young workers in the Nordic countries", (n= 1056) and mentioned that most of the studied young workers (82.8%) exposed to work related health hazards. This may be due to lack workplace protections, long working hours and injury risks from machinery or tools too big for them to handle and workplace violence, also lack of experience and in adequate training related to their young age.

Concerning total knowledge of the studied children about health risks at industrial workshops, the present study declared that less than one tenth of them had good level of knowledge, while more than one quarter of them had average level of knowledge and almost two thirds of them had poor level of knowledge. These results were in accordance with **Banstola et al., (2019)**, Nepal entitled

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"Health problems among child labour in the brick industries of Nepal", (n= 225) and reported that nearly two thirds of the studied children (61.9%) had poor level of knowledge about health risks in the brick industries. This may be related to lack of awareness and experience as a result of their young ages, lack of available training courses about health risks of the work place.

Additionally the studied children's total practices about prevention of health risks, the present study clarified that less than one fifth of the studied children had satisfactory level of total practices, while most of them had unsatisfactory level of total practices about prevention of health risks. This result agreed with **Das, (2019)** India, entitled "Health hazards and risks for musculoskeletal problems among child labourers in the brickfield sector of West Bengal, India", (n= 232) and reported that most of the studied children (88.3%) had unsatisfactory level of practices about prevention of work health risks. From the researchers' point of view, this may be related to inadequate training about occupational hazards and protective measures.

According to research question number four: "Is there a relation between knowledge and practices of the studied children regarding health risks related to working at industrial workshops?" the present study revealed that there were a highly statistically significant relation between the studied children's total level of knowledge and practices regarding health risks. This can be explained as level of knowledge has a significant effect on level of practice among the studied children. This finding agreed with **Grytnes et al., (2021)**, Denmark entitled "Safety learning among young newly employed workers in three sectors", (n= 33) and found that level of knowledge was significantly associated with safety practices

of the studied subjects. Also, a study by **Habib et al., (2021)** who stated that there were a highly statistical significance relation between the studied children workers' total knowledge and their practices regarding occupational health and safety.

### **Conclusion**

Approximately one third of the studied children were aged between 10 to less than 15 years. Less than two thirds of the studied children were going to school. More than one quarter of the studied children worked at carpentry workshop, auto repair shop & marble workshop. Most of them exposed to loud noises & sounds, work injuries (such as burns, cuts, fractures, shedding of the skin) and activities that were inappropriate for the child's physical and mental ability, While more than one quarter of them didn't suffer from family disintegration. Less than one tenth of children had good level of knowledge regarding health risks at industrial workshops. Less than one fifth of the studied children had satisfactory level of total practices. There were a highly statistically significant relation between the studied children's total level of knowledge and practices regarding health risks.

### **Recommendations:**

- Training programs should be provided for children in labor about health risks of child labor.
- School nurses should provide health education programs about the physical, psychological and behavioral problems that working students may exposed to it.
- Further studies: factors that enhances health status of working children.

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## المخاطر الصحية بين عمالة الأطفال في الورش الصناعية

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تشير عمالة الأطفال إلى تشغيل الأطفال في أي عمل يجرمهم من طفولتهم ويتعارض مع حقهم في الالتحاق بالمدارس و التفرغ للتعليم وكذلك يؤثر على الطفل تأثيراً سلبياً عقلياً و جسدياً و اجتماعياً و أخلاقياً. لذلك هدفت الدراسة إلى تقييم المخاطر الصحية بين عمالة الأطفال في الورش الصناعية وقد اجريت الدراسة بالورش الصناعية بعزبة السوق وطريق الشموت ببنها التابعة لمحافظة القليوبية. تم استخدام عينة ملائمة مكونة من 60 طفل يعملون في الورش الصناعية بالمناطق المذكورة. وقد كشفت النتائج ان أقل من عُشر الأطفال لديهم مستوى جيد من المعرفة فيما يتعلق بالمخاطر الصحية في الورش الصناعية. كما اوصت الدراسة انه يجب تصميم برامج تدريبية للأطفال العاملون حول المخاطر الصحية لعمالة الأطفال.