

PHYSICAL, PSYCHOSOCIAL HEALTH AND QUALITY OF LIFE AMONG WORKING CHILDREN IN SMALL INDUSTRIAL SHOPS

By

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Abstract

Introduction: Child labor has been a major public health concern worldwide, being associated with adverse physical and mental health outcomes. **Aim of Work:** To assess the physical health and nutritional status of working children through specific physical examination and laboratory investigations, to study their psychosocial status and to clarify the association between child work and quality of life. **Materials and Methods:** Comparative cross-sectional study was conducted among (45) working children and (45) control group. All participants were personally interviewed at their workshops and were subjected to general questionnaire (sociodemographic, schooling, nutritional aspects and workplace characteristics), Instrument for Psychosocial Assessment of working children questionnaire, The Child Health Questionnaire for Quality of Life Assessment, physical examination and investigation (hemoglobin level). **Results:** The mean weight and hemoglobin level of working children were lower than that of control group in the younger age groups while the older the age group, the lower in mean length with statistically significant difference. The working children had lower mean scores than control group regarding stress, relationship, leisure, social factors, hopelessness and helplessness, abuse and maltreatment. The working children had lower mean scores than control group regarding general health perceptions, emotional functioning, behavioral functioning, family cohesion and schooling ($p < 0.001$). The working children had lower mean total physical score and total psychosocial score than control group indicating lower quality of life with significant difference. **Conclusion and Recommendations:** Working children are subjected to higher levels of physical and mental stressors at work and child labor has negative impact on quality of life. Legislations should be implemented to protect them.

Key words: Child labor, Physical, Psychosocial health and Quality of Life.

Introduction

Child labor has been a remarkable worldwide issue that associated with poverty, gender inequality and inappropriate educational opportunities (Ibrahim et al., 2019). Child labor does not include all sorts of work done by child. Children's participation in work that has no negative consequences for their health or education is generally positive (Adonteng-Kissi, 2018). Child labor, according to the International Labor Organization (ILO), is "work that deprives children of their childhood, potential, and dignity, and is harmful to their physical and mental development (Kamruzzaman and Hakim, 2018).

In the Millennium Development Goals, which were adopted by 191 countries in 2000, child labor was one of the main topics (Shi et al., 2019). Child labor was subsequently included in the Sustainable Development Goals, which calls for the eradication of child labor by 2030 (Ramos, 2018).

Despite the reported decrease in child labor between 1995 and 2000, it continues to be a major health concern. In 2016, it was estimated that about 150 million children less than 14 years were engaged in labor worldwide, with the

majority of them working in conditions that deny them a healthful childhood (UNICEF, 2016).

According to an ILO report on the age breakdown of children in child labour, 48% of those in child labour are between the ages of 5 and 11, 28% are between the ages of 12 and 14, and 25% are between the ages of 15 and 17. Younger children constitute a smaller but still significant proportion of all children involved in hazardous labour. Children aged 5 to 11 make approximately a quarter of all children in hazardous employment groups (about 19 million children). While there are no exceptions to the rule that all children must be protected from hazardous child labour, the group of very young children who are directly exposed to hazardous work conditions that risk their health, safety, and moral development is of particular concern (ILO, 2017).

There is a complex relationship between education, intellectual development, existence of health problems, and child labor, where the physiologic development of the brain and nervous system in addition to intellectual development and educational attainment may be impaired (Hughes et al., 2017). Child labor is

significantly and positively associated to adolescent mortality, to a population's nutrition level, and to the existence of infectious disease (Roggero et al., 2007).

Coverage and researches for the impact of child labor on health is limited in our country. In the current study, we try to highlight some aspects of this problem for the sake of healthy childhood and future productive adulthood.

Aim of Work

To assess the physical health and nutritional status of working children through specific physical examination and laboratory investigations, to study their psychosocial status and to clarify the association between child work and quality of life.

Materials and Methods

Study design: this is a comparative cross-sectional study

Place and duration of the study: The study was conducted at Herafieen area, Mitgamr city, Dakahlia governorate, Egypt. Data were collected during the duration from October 2020 to April 2021.

Study sample: The study included two groups:

a) Exposed group: male children less than 18 years old, working at least for one year in enterprises of aluminium, tin and car repair at Herafieen area, Mitgamr city.

b) Non-exposed group: Matched group of male school children from different grades of governmental schools at Mitgamr city.

-Exclusion criteria: subjects who have deformities, congenital diseases or those who refuse to participate in the study.

Sample size and sampling technique: knowing that body mass index (BMI) among working children were 21.6 ± 2.6 versus 23.3 ± 3.1 kg/m² of non-working group (Shoman et al., 2015), at confidence level 95% and power 80%, so total sample size is 90 children (45 children in working group and 45 children in nonworking group); calculated by Open epi (Dean et al., 2013).

Sample selection: simple random technique: Working children was included randomly from small workshops of tin, aluminum and car repair of Herafieen area of Mitgamr city (after agreement of them and of their workshop owners) .Included working children were further categorized into three age

groups according if they correlated to either primary, preparatory or secondary stage of school . A list of governmental schools at Mitgamr city was obtained from the sector of Mitgamr Educational Administration then one school from primary, preparatory and secondary were chosen randomly where, un-exposed children was selected by simple random technique from the students frame of each school. Within each school, the number of unexposed children was selected equal to that of working children (exposed group) whose ages lies in that educational stage.

Pilot study: A pilot study was conducted to develop and check the response to different items of the questionnaire and other tools of the study. Reliability and face validity of the questionnaire was assessed as well.

Study methods: all the study participants were personally interviewed and subjected to the following:

I-General questionnaire: the questionnaire was adapted from previous researches (Esin et al., 2005, Caglayan et al., 2010 and Khan, 2014) and translated to Arabic language by the authors. It was an interview questionnaire between the authors and the children.

1. The sociodemographic characteristics of the children and their schooling.
2. Nutritional profile (intake of: fruit, vegetables, milk, tea and coffee).
3. Social habits: (smoking)
4. History of health problems: Acute and chronic health problems and the use of health services.
5. Workplace: duration of work, working hour per day and use of personal protective equipments (PPE).

II- Psychosocial Assessment:

Instrument for Psychosocial Assessment of Working Children (IPAW) questionnaire was used to measure children's psychosocial health in an occupational setting (Gunn et al., 2012).

The IPAW questionnaire consists of 48 items divided among twelve domains. The following ten domains (32 questions) used to compare between working and non-working children: self-esteem, stress, relationships, leisure, emotional factors, somatic factors, chronic fear and anxiety, hopelessness, social factors, abuse and maltreatment. While the other two domains (personal agency, supervision and training) were omitted as they are related explicitly to

the work and its context. Each question has four-point scale: Never, Sometimes, Often, and Always (Never= 1 and Always= 4). The Mean score (\pm SD) of each domain was calculated and ranged from 1 to 4. In general, higher scores indicate that the population has higher psychosocial impairment vulnerability in a certain domain relative to other domains or other study populations, while a low score is indicative of greater psychosocial wellbeing.

III- Quality of life assessment:

The Child Health Questionnaire (CHQ) child form was used which is an internationally recognized general Health-Related Quality of Life (HRQOL) instrument that has been standardized for use with children ages 9–18. It consists of 28 items divided among nine domains: General health perceptions, bodily pain, change in health, physical functioning, emotional functioning, behavioral functioning, self-esteem, and family cohesion.

The individual domain score were aggregated to derive two summary component score; physical functioning and psychosocial health summary scores. Each item has four-point likert scale from 0 to 3. Scores are transformed to a 0 – 100 scale with a

mean \pm SD of 50 ± 10 , where 0 indicate worst possible health state and 100= best possible health state. Score less than 30 indicating poor HRQOL (Madi et al., 2004).

IV- Physical examination:

Height and weight was measured on a mechanical scale and body mass index (BMI) was calculated.

V- Blood samples: A sample of blood was taken in specific tubes and named by children names with the help of a trained nurse for hemoglobin (Hb) level assessment.

Consent

Informed consent was obtained from all participants after explanation of the research aim and objectives and ensuring the confidentiality of the data.

Ethical Approval

The study protocol was approved by the Ethical Committee of the Faculty of Medicine, Zagazig University, Egypt, before implementing the study.

Data management

Data were entered and statistically analyzed by using Statistical Package for the Social Sciences (SPSS) version 21.0. Qualitative data were presented in the form of frequency and percentage

and χ^2 test or Fisher's exact test (as appropriate) was used for comparison between groups. CHQ items were scored by four-point likert scale from 0 to 3 then these raw data of domains were converted to z-score then the z-score converted to a scores having a mean= 50 and SD= 10. Quantitative data were

presented in the form of measures of central tendency (arithmetic mean) and measures of dispersion (standard deviation); t-test was applied for comparing two means. Difference was considered as statistically significant when the p value is less than 0.05.

Results

Table (1): Sociodemographic and work characteristics of the studied working children.

Characteristics	No (40)	%
Age /years		
- 9-12	11	24.44
- >12-15	16	35.56
- >15	18	40
Schooling		
- Leave school	6	13.33
- Underachievement	31	68.89
- Regular school	8	17.78
Work perceptions		
- Perception of physical exertion at work	18	40
- Very tiring	13	28.89
- Difficult	9	20
- Easy/comfortable	5	11.11
Satisfaction with current job		
- High	6	13.33
- Little	12	26.67
- None	27	60
Use of PPE		
- Yes	4	8.89
- NO	41	91.11
Duration of work/ years (Mean±SD)	4.56±3.24	
Working hours/day ((Mean±SD))	8.55±3.71	

Table 1 revealed that all the study participants were males, their age ranged from 9 to 18 years, 40% of studied group above 15 years whereas 24.44% were under 12 years with mean duration of work was 4.56±3.24 and mean working hours per day was 8.55±3.71. Only 17.78% of them had regular school while 13.33% left school and 68.89% had school underachievement. Regarding work perceptions; 40% felt perception of physical exertion at work, 28.89 % were very tiring, 20% felt difficulty and only 11.11% of them expressed the work as easy and comfortable. Sixty percent of working children had no satisfaction with their current jobs and 8.89% used personal protective equipments.

Table (2): Social, nutritional and smoking habits of working children and their comparison group.

	Working children		Control group		X ²	p
	No	%	No	%		
Children's number in family						
- ≤3	13	28.89	27	60	8.82	0.002*
- >3	32	71.11	18	40		
Father's education level						
- Elementary & reads and writes	23	51.11	5	11.11	27.07	<0.001**
- Secondary School	19	42.22	17	37.78		
- Graduate and above	3	6.67	23	51.11		
Mother's education level						
- Elementary & reads and writes	31	68.89	6	13.33	29.44	<0.001**
- Secondary school	10	22.22	22	48.89		
- Graduate and above	4	8.89	17	37.78		
Regular meals intake						
- Yes	17	37.78	37	82.22	18.52	<0.001**
- NO	28	62.22	8	17.78		
Regular intake of fruit & vegetables						
- Yes	12	26.67	34	75.56	21.52	<0.001**
- NO	33	73.33	11	24.44		
Intake of coffee and tea						
- Yes	27	60	5	11.11	23.47	<0.001**
- NO	18	40	40	88.89		
Smoking						
- Yes	13	28.89	4	8.89	5.874	0.015*
- NO	32	71.11	41	91.11		

*: Statistically significant

**: Highly statistically significant

Table 2 showed that 71.11% of working group children's number in family was more than 3 while it was 40% in the control group ($p < 0.001$). There was statistically significant difference between the two groups regarding the parents' education ($p < 0.001$); taking regular meals, fruit and vegetables ($p < 0.001$), coffee and tea ($p < 0.001$), and smoking ($p = 0.015$).

Table (3): Clinical findings among the studied groups.

	Working children		Control group		t	p
	Mean	±SD	Mean	±SD		
Height/cm						
- 9-12	132.56	8.86	135.2	10.36	1.29	0.19
- >12-15	145.33	10.13	149.76	10.1	2.07	0.036*
- >15	159.42	11.4	164.15	9.7	2.11	0.04*
Total height/cm	144.78	10.52	149.7	9.34	2.34	0.021*
Weight (Kg)						
- 9-12	31.73	6.63	35.43	6.76	-2.62	0.01*
- >12-15	39.3	8.84	44.93	8.66	3.05	0.003*
- >15	46.7	10.4	49.85	11.53	1.36	0.17
Total weight (kg)	39.24	9.41	43.41	9.63	2.07	0.04*
Hemoglobin level (gm/dL)						
- 9-12	11.7	1.51	13.5	1.58	5.52	<0.001**
- >12-15	12.2	1.61	13.4	1.53	3.62	<0.001**
- >15	14.32	1.88	14.56	2.1	0.57	0.56
Total hemoglobin level (gm/dL)	12.74	1.62	13.82	1.84	2.95	0.004*

*: Statistically significant

**: Highly statistically significant

Table 3 showed that the differences in mean length, weight and hemoglobin between the working children and control group were variable in different age groups. The older the age group, the lower in means length of working children with statistically significant difference. The mean weight and hemoglobin of working children were lower than that of control group in the younger age groups with statistically significant difference.

Table (4): Psychosocial assessment of the studied group.

Psychosocial assessment	Working children		Control group		t	p
	Mean	SD	Mean	SD		
Self-esteem	3.02	0.65	2.93	0.71	0.61	0.54
Stress	2.46	0.67	3.44	0.52	11.38	<0.001**
Relationships	2.54	0.81	3.37	0.43	6.07	<0.001**
Leisure	2.9778	0.72	3.33	0.56	2.6	0.011*
Emotional factors	2.03	0.85	3.41	0.49	9.43	<0.001**
Somatic factors	3.04	0.705	3.22	0.59	1.28	0.2
Chronic fear and anxiety	3.1	0.68	3.34	0.48	1.93	0.056
Hopelessness& Helplessness	3.2	0.68	3.71	0.35	4.47	<0.001**
Social factors,	2.88	0.71	3.33	0.56	3.27	0.002*
Abuse and maltreatment	2.57	0.72	3.37	0.58	5.80	<0.001**

*: Statistically significant

**: Highly statistically significant

Table 4 showed psychosocial assessments of the studied groups ;it was evident that the higher scores in a certain domain indicated the greater psychosocial wellbeing. The working children had lower mean scores than control group regarding stress, relationship, leisure, social factors, hopelessness and helplessness, abuse and maltreatment with statistically significant difference. There were no statistical difference between the two groups in the mean scores regarding self-esteem, somatic factors, chronic fear and anxiety.

Table (5): Quality of life among of the studied groups.

Quality of life	Working children	Control group	t	p value
General health perceptions	63.53±11.25	73.25±10.17	4.29	<0.001**
Somatic pain	59.29±15.45	65.51±14.5	1.96	0.052
Physical functioning	75.92±16.25	79.56±13.12	1.68	0.09
Emotional functioning	51.81±9.85	71.33±12.85	8.08	<0.001**
Behavioral functioning	68.11±11.37	73.53±9.15	2.49	0.014*
Family cohesion	55.82±13.45	83.13±8.42	11.54	<0.001**
Schooling	46.55±16.25	82.73±9.88	12.76	<0.001**
Total Physical summary score	66.38±14.27	72.77±12.68	2.24	0.027*
Total Psychosocial summary score	58.06±13.41	75.57±11.15	6.73	<0.001**

*: Statistically significant

**: Highly statistically significant

Table 5 showed the quality of life among the studied groups and it was apparent that the higher scores in a certain domain indicate the better the quality of life. The working children had lower mean scores than control group regarding general health perceptions, emotional functioning, behavioral functioning, family cohesion and schooling with statistically significant difference. While there were no statistical difference between the two groups in the mean scores regarding Somatic pain, and Physical functioning. Generally, the working children had lower mean total physical summary score ($p=0.027$) and total psychosocial summary score ($p<0.001$) than control group indicating lower quality of life.

Discussion

Child labor is a form of exploitation of children when this work deprives them of their childhood, interferes with their abilities to attend regular school, and is physically, mentally, socially and morally harmful. This form of exploitation is worldwide prohibited by legislations (Srivastava, 2019).

Children who early involved in labor have poor health status, which could be exacerbated and aggravated by labor. Malnutrition and poor physical growth were observed to be highly prevalent among them (Tiwari and Saha, 2014 from India and Zaheri and Kameli, 2018 from Iran).

The current study was done to assess

the physical, psychosocial health and nutritional status of working children, and to clarify the association between child work and quality of life.

All the study participants were males as working in small industrial shops is suitable for males than females and their ages ranged from 9 to 18 years (Table 1). In a Jordanian study on the psychosocial impact of child labour revealed that 96.6% of the participants were males, while 3.4% were females; their ages ranged from six to sixteen years old, with a mean age of 14.3 years (SD 14.1.7) (Al-Gamal et al., 2013).

Among working children group; most of them were dissatisfied with their work and felt physical exertion and difficulty with work (Table 1). According to Nuwayhid et al. (2005), in their study on the associations between work status and multidimensional health indices in a sample of urban Lebanese children, they detected that about 64% of working children were satisfied with their current job and 52% of them described their work as simple/comfortable; it could be to the difference of the work nature of the two groups.

Parents' poor education and big family size were the predominant

socio-demographic characteristics. Similar findings were reported by Adegbenro et al. (2017) that the predictors of child labour include lower education of mothers (OR=8.786, $p=0.002$) and the family had more than three children (OR=2.488, $p=0.002$). Afriyie et al. (2019) in their study about determinants of child labour practices in Ghana reported that a lack of education in parents is associated with early employment of their children and that parental preferences affect how education is appreciated.

About nutritional habits; 37.78% of working children used to take regular meals compared to 82.22% of control group while 26.67% of working children used to take fruit and vegetables regularly compared to 75.56% of control group. More than half of working children used to take coffee and tea compared to 11.11% of control group, 28.89% of working children were smokers compared to 8.89% of control group (Table 2). Similar results were reported by Nuwayhid et al. (2005) who detected that working children were observed to consume less fruit and vegetables and more coffee and tea on a regular basis.

Dall'Agnol et al. (2011) showed

that child labour was closely linked to smoking. Work develops a sense of independence and allows them to spend significant periods of time outside home without the supervision of their parents. This could result in undesirable behavior and negative habits include smoking.

The differences in mean length, weight and hemoglobin between the working children and control group were variable in different age groups. Among the older age group, the means length of working children was lower than that of control group with statistically significant difference (Table 3); this could be due to the cumulative effect of nutritional deficiencies with long duration of work. Tiwari and Saha (2014) in their study on child labor at gem polishing units of Jaipur, India; found similar result and Alam et al. (2021) in their work on impacts of health and economic costs on street children working as waste collectors in Dhaka city, Bangladesh; reported that 64% of examined working children suffered from growth retardation.

The mean weight and hemoglobin level of working children were lower than that of control group in the younger age groups while no difference

was found among older age group (Table 3). This could be explained by that, the older children could take care of themselves as regard nutrition. It's believed that older children are more mature and prepared to deal with workplace challenges and manage their duties (Graves et al., 2017). However, O'Donnell et al. (2005) reported that the height, weight, and body mass index were comparable between the two groups regardless the age group; which could be attributable to that the study participants' identical social and nutritional backgrounds.

Assessing the psychosocial health of the studied groups revealed that working children suffered from stress, hopelessness and helplessness, abuse and maltreatment. Also they suffer from impairment in relationship, leisure, social life. However there were no statistical difference between the two groups in the mean scores regarding self-esteem, somatic factors, chronic fear and anxiety (Table 4). Ibrahim et al. (2019) in their study on the impacts of child labor on child's health in low- and middle-income countries; reported that a higher prevalence of mental and/or behavioral issues has been linked to child work. Furthermore, child work has been implicated to one or

more forms of abuse. Also they found that working children who labor long hours are more likely to experience psychological distress, anxiety, drug misuse, depression, exhaustion, and insomnia. Antisocial behavior and low self-esteem were also reported

An evidence of the negative impacts of child labour on mental health reported by Trinh et al. (2020) that levels of socio-behavioral problems were found to be most affected by child labour. These findings could be explained by; child work is associated with missing school, loss of time for learning and playing. In addition, working in a job that is considered low can lead to stigmatization and low self-esteem (Batomen, 2018).

Younger age require more sleep than adults (Shabbir et al., 2020). Thus, work and school demanding times schedules may overlap with main physiological needs, as well as other important age group-appropriate activities, as recreation and sports, family and community commitments, and friends' relationships (Rubenson and Dahlén, 2014).

Some working children may be subjected to bullying, hostile working settings, or workplace violence, which

are all possible causes of mental health impairment. (Runyan et al., 2005 and Smith et al., 2015) besides, exposure to workplace health and safety hazards (O'Connor et al., 2005 and Runyan et al., 2007).

In contrast, others find the benefit of early work. Work could encourage the development of their sense of responsibility and discipline, help them to achieve new skills, and provide opportunity to explore new career goals and to achieve economic advances (Cooper and Rothstein 1995). Also, it may teach working children the value of money and provide them with valuable role model (Dunn and Runyan, 1993).

On assessing of the quality of life (QOL) among the studied groups; the working children had statistically significant poor quality compared to the control group regarding general health perceptions, emotional functioning, behavioral functioning, family cohesion and schooling. While there was no statistical difference between the two groups in the mean scores regarding somatic pain, and physical functioning (Table 5).

Working children may be less capable or efficient to assess cause-effect scenarios than adult workers

(Spear, 2013). As, working children may have difficulty to determine the best way to approach hazardous work tasks or may inappropriately determine the degree of danger that could be associated with a given task (Thévenon and Edmonds, 2019). This is proved in neurodevelopmental research revealing lower activation in brain regions that responsible for responding to adverse outcomes among adolescents relative to adults (Ernst et al., 2005).

The current research work revealed that the working children had lower mean physical and psychosocial score than control group indicating lower quality of life (Table 5). The same results were reported by Graves et al. (2017) who investigated the association between work, work intensity, and quality of life (QOL) among adolescents in Washington State and found significantly lower QOL scores among younger working children relative to non-working ones.

Conclusion and Recommendations:

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.

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Conflict of interest

No conflict of interest

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