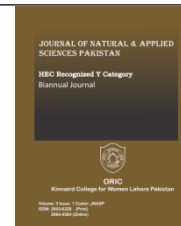




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## **ENVIRONMENTAL HEALTH AND SAFETY RISKS IN CHILDREN WORKING IN VARIOUS INFORMAL SECTORS: A COMPARATIVE STUDY OF TWO DISTRICTS OF PUNJAB**

Wajiha Ali <sup>1\*</sup>, Muzaffar Majid <sup>1</sup>, Sajjid Rasheed Ahmed<sup>1</sup>

<sup>1</sup>College of Earth & Environmental Sciences

### **Article Info**

\* Corresponding Author

E-Mail: [wajihaamjjed@hotmail.com](mailto:wajihaamjjed@hotmail.com)

### **Abstract**

Children of various age groups are facing environmental as well as health and safety problems especially in developing countries. Child labor is usually defined as any sort of work which deprives their childhood, dignity as an emerging social threat creates an alarming situation in society. Worst condition is intensified for those children who add hazardous workplaces. Adverse environmental safety and health conditions have more health impacts on children than adults. For seeing situation of child hazardous condition in Pakistan, a survey shown the results revealed significant differences in literacy rates. That's why we were focus with in the district of Chakwal and Muzaffargarh dwell in province Punjab. Qualitative and quantitative method had been designed consisting of both closed and open-ended questions about complex phenomenon of child labor, group discussions with the parents and contractors. Population of the study consisted of all the children working in different sectors facing health and safety risk. The key findings of statistical analysis demonstrated the significant role deals with all socio-economic factors and other work-related issues (i.e., age, monthly income, working hours, workplace conditions, employer's behavior, maltreatment, and hazards). We have to focus on our system and by restricting the rules and law, children not allowed to work in serious hazardous occupations.

### **Keywords**

Working Children, Health and Safety, Hazardous Environment, Working Conditions, Environmental Health, Safety risk.



## 1. Introduction

A work that deprives children of their childhood, their potential, and their dignity, and that is harmful to physical and mental development is referred to as child labor. It mainly refers to work that is mentally, physically, morally, or socially dangerous to children, interferes with their schooling, deprives them the opportunity to attend school, forces them to drop out of school. The normative definition for child labor is stipulated by the provisions of ILO Convention 138 on Minimum Age for Admission to Employment, ILO Convention 182 on the Elimination of Worst Forms of Child Labor and the UN Convention on the Rights of the Child (ILO, 2017). Child labor refers to the exploitation of children through any form of work that deprives children of their childhood, interferes with their ability to attend regular school, and is mentally, physically, socially, or morally harmful (Leiss, 2018). The family who is forced to send children to scavenge for food or work is actually already in the process of creating a third living generation of uneducated under employed laborers (Halim, 2020). Children are often employed because they are more easily controlled than an adult and are unlikely to demand higher wages or better working conditions. Many children are forced to work for 12 to 16 hours a day. Beatings are used to enforce compliance and punish mistakes. These children are under the total physical and mental control of their “employers”. If they become sick, they can be discarded and replaced by others at minimal cost (Markkanen, 2015). Children work in the formal and informal sectors. Almost 93.3% Child labor in the informal

sector. In the field children work in the informal sector, including agriculture. Poultry breeding, fish drying, salt production, including shrimps agricultural and production logistics. The girls work mainly in the clothing industry (Rasmussen, 2020). Enactment over the world restricts youngster work (Libao, 2007). Child labor exploits a child for someone else’s gain, often through violence, abuse, and threats. 1 in 4 victims of modern slavery are children. 168 million children exploited nowadays. Many of them are in a hazardous working situation that would be considered labor exploitation even for an adult (Ma *et al.*, 2012). Both the Constitution of Pakistan and national / provincial labor laws prohibit the employment of children under the age of 14 years. The primary laws dealing with child labor in Punjab are the “Punjab Restriction on Employment of Children Act, 2016” and “Punjab Prohibition of Child Labor at Brick Kilns Act, 2016”. There are no recent public studies on children. Work in Pakistan but with easier work test provides important documents for study. It is also child labor. So, it's a bit of work among the young people who have the authority of entrepreneurship and dangerous work 15-18 years old (Satin, 2011).

### 1.1. Statement of the problem

Child labor refers to the exploitation of children through any form of work that deprives children of their childhood, interferes with their ability to attend regular school, and is mentally, physically, socially, or morally harmful. Child labor can result in extreme bodily and mental harm, and even death. It can lead to slavery and sexual or economic exploitation, and in nearly every case, it cuts

children off from schooling and health care, restricting their fundamental rights and threatening their futures. A health hazard is usually something that happens over a longer period due to exposure to a chemical agent or radiation but could also mean working in stressful or unsanitary conditions. Present study aims to investigate the environmental health and safety risks in children working in various sectors: a comparative study of two districts of Punjab.

### 1.2. Objectives of the study

Specific objectives of the study were.

- 1) To find out the working children and health and safety problems of two districts of Punjab.
- 2) To analyze the environmental health and safety risks in working children of two districts of Punjab.
- 3) To highlight the health and safety risks in children working in adverse environmental conditions in various sectors.

### 1.3. Research Questions

- 1) What are the working children and health and safety problems of two districts of Punjab?
- 2) What are the environmental health and safety risks in working children of two districts of Punjab?
- 3) What are the health and safety risks in children working in adverse conditions in various sectors?

### 1.4. Hypothesis of the study

H<sup>01</sup>: There is highly significant difference between working children in Chakwal and Muzaffargarh district

H<sup>02</sup>: There is significant difference in percentage of working children (5-17 age) in various workplace of district Chakwal and Muzaffargarh

H<sup>03</sup>: There is significant difference in percentage of children (5-17 age) working in adverse environmental conditions in Chakwal and Muzaffargarh district.

H<sup>04</sup>: There is significant difference in percentage of working children (5-17 age) having work-related injuries/ illnesses in various sectors in district Chakwal and Muzaffargarh

## 2. Literature Review

Child labor is a global phenomenon, but more attention should be paid to developing countries. More than 170 million children around the world still work to meet their basic needs. The International Labor Organization (ILO) estimates that around 22,000 child workers die every year because of occupational hazard. The nature and risks of work, and possible health effects and working conditions on children should be carried out. Urgent attention is needed to the anatomical, physiological, and psychological aspects of various socioeconomic conditions (Abdel, 2008).

Work, environment and working conditions affect the health and development of children. The damage is greater when child labor interferes with school, recreation, and leisure. Good data on child labor health is difficult to assess and assess the harmful aspects of child labor, particularly in Southeast Asian countries. (Alem, 2016).

### *2.1. How child labor effect people*

Poor families do not send their children to work in factories if they can afford to send them to school. Several Asian nations that banned child labor found that child prostitution and begging went up. The life of these children was worse after labor was banned (Arcury, 2021). Child Labor laws have been passed in most western countries. Paradoxically it is western corporations who exploit children in low-income economies. Unfortunately, even without western abuses the same children cannot afford education, food, even proper housing so they are forced into the workforce by their families (Athanasiadou, 2018).

### *2.2. Hazardous Environmental conditions*

Most children are engaged in hazardous or dangerous jobs such as farming, manufacturing, Manufacturing, retail, and support activities. Agriculture is the most common form of child labor worldwide, employing more children than any other sector. many farms lack families where children can help their parents with their daily chores or explore future careers. This process led to a decline in the number of farms, particularly small family farms, and a decline in the number of workers employed as farms increased in size and productivity. As a result, there are fewer farmer's children and more and more young people, and farmer's children are employed in agriculture (Bonvegno, 2015). Adolescents who are exposed are carrying heavy loads or working in unsafe positions. Slouching and occasional twisting in similar postures impair the development of the child's extrinsic musculoskeletal system. Poor

sanitation in the fields spreads pesticides and infectious diseases that are made worse by the heat (Bonnetterre, 2017). Manufacturing is a separate sector, but the nature of the industry varies greatly from country to country. Most of these children work in small workshops. these companies make extensive use of child labor (Bose, 2008). These companies, while legally protected, are more difficult to regulate and to work to higher occupational health and safety standards (Castillo, 2014). Each manufacturing process poses certain risks to the work undertaken in that industry and some general risks arise from careless handling of the manufacturing process; lighting, noise pollution, access to or use of hazardous machinery and lack of protective equipment. As a result, child labor is exposed to high temperatures, high cut and burn hazards in the copper and glass bracelet industries, silica dust in pottery factories, chemical hazards, and fire and explosion hazards (Calvert, 2013). Workers often live in work environments and are forced to work irregular hours, take days off and are denied classes. Far from their families, they are completely vulnerable and subject to unforgivable treatment by their superiors and sometimes even physical, emotional, and sexual abuse. (UNICEF, 1997). Youth prostitution has been described as "an act of bringing up or providing stewardship to a child for the purpose of prostitution constitutes consideration, financial or otherwise (Doocy, 2016).

## **3. Methodology of the Study**

### *3.1. Research design*

The present study was descriptive and quantitative in nature. Purpose of the study was to understand

### 3.2. Population

Population of the study consisted of all the children working in different sectors facing health and safety risk. The focus group is of children from district Chakwal and Muzaffargarh of age 5 to 17 year respectively.

### 3.3. Sample and sampling technique

Household survey was the main technique of data, in which Punjab Bureau of Statistics play vital role in providing basic indicators for planning and research. Cluster survey was used for data collection on various indicators.

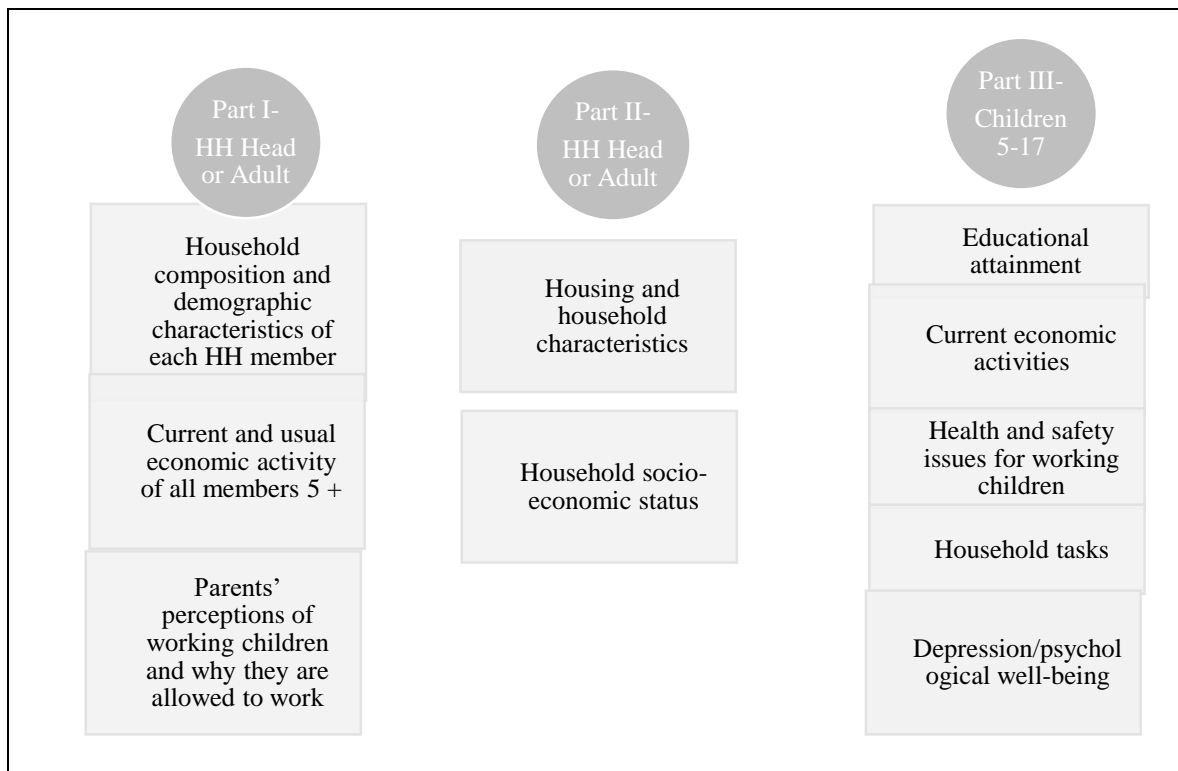
Two districts of Punjab were selected in study. Chakwal 2025 and Muzaffargarh 460 children were taken as sample through cluster sampling

complex phenomenon of children working in the unsafe and adverse occupations.

technique. Children of age 5 to 17 years were sample of the study.

### 3.4. Research instrument

The instrument was developed by researcher; it was five-point Likert scale which comprise 30 statements. Instrument was translated in Urdu language for better understanding of respondents. The responses options were ranging from strongly agree to strongly disagree. It was divided into three main sections, section A related to adult information mainly focused on characteristics responded by adults and section B was about household characteristics answered by household members and section three was based on children.



**Figure 1:** Structure of Questionnaire

### 3.5. Data collection

The researcher has visited all the areas of sample, and distributed survey form to respondents. It took almost 2 months to retrieve survey questionnaires.

### 3.6. Data analysis

Data was analyzed through mean score, standard deviation and frequency of each statement, hypothesis of the study was tested through t-test using SPSS.

## 4. Data Analysis and Interpretations

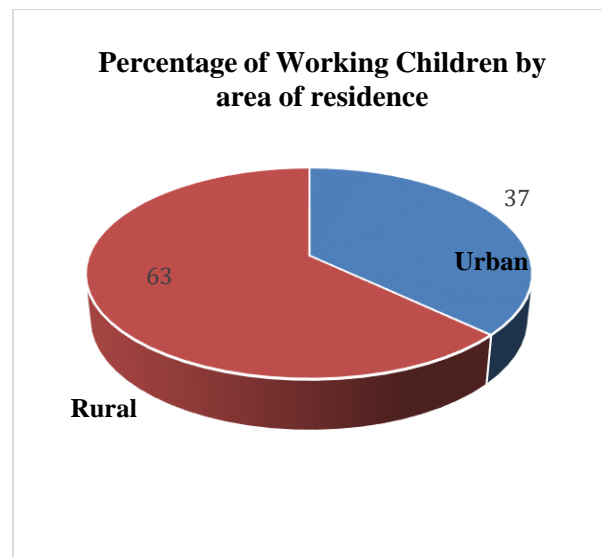
Data were entered into database for analysis. All the survey forms were manually checked. All the questions in the form were coded and entered data base which are designed for the purpose. The data were later analyzed via SPSS and excel sheet software to compare results to established comparisons between work and different occupational health and safety indicators.

**Table 1:** Population of Working Children by area of residence

District	Total	Urban	Rural
Chakwal	174	65	109
Muzaffargarh	91	33	58
	265	98	167

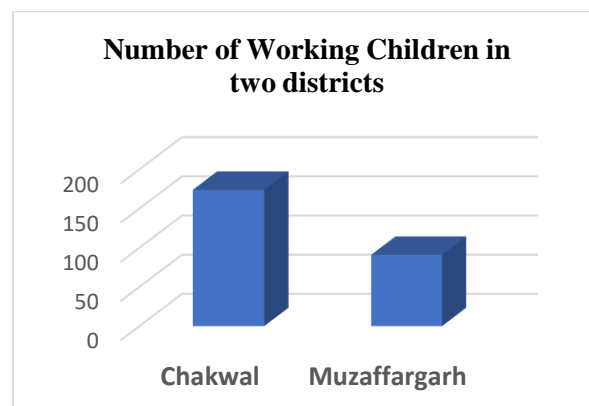
Table 1 explains the total population of working children from the sample size of 2025 and 460 for Chakwal and Muzaffargarh respectively. 8.6 percent of children were working in district Chakwal whereas 19.8 percent of working children were reported in district Muzaffargarh.

It also indicates the further elaboration of working children by the area of residence i.e., urban and rural. Most of the percentage of children was working in rural areas in both districts.



**Figure 2:** Percentage of Working Children by area of residence

The working children were further categorized in to two main age groups in accordance with Punjab law, which defines age group of 5-14 years as child labor while the term Child Labor and Adolescent Hazardous Work (CLAHW) is used for the population of 5–17-year-olds, which also includes adolescents aged 15–17.



**Figure 3:** Number of Working Children in two districts

**Table 2:** Percentage of working children in districts by age group, sex and residency

District	Age group	Sex		Residency		Total	No. of Child Labour	Percentage
		Male	Females	Rural	Urban			
Chakwal	5-14	783	752	1323	21	1535	81	5.2%
	15-17	262	228	424	66	490	93	18.9%
	<b>Total</b>	<b>1045</b>	<b>980</b>	<b>1747</b>	<b>278</b>	<b>2025</b>	<b>174</b>	<b>8.5%</b>
Muzaffargarh	5-14	205	175	311	69	380	59	15.5%
	15-17	40	40	59	21	80	32	40%
	<b>Total</b>	<b>245</b>	<b>215</b>	<b>370</b>	<b>90</b>	<b>460</b>	<b>91</b>	<b>19.7%</b>

In the district Chakwal among target population of 5–17-year-olds, 75.8 percent children were aged 5-14, 24.2 percent were laid in 15-17 age group. The share of boys was 51.6 percent and mostly lived in rural areas. In the district Muzaffargarh among target population of 5–17-

year-olds, 82.6 percent of children were aged in between 5-14, 17.4 percent were of 15-17 age groups. The share of boys was 53.2 percent and most of the children live in rural areas.

**Table 3:** Number and percent of working children (5-17 ages) in various workplace of district Chakwal and Muzaffargarh

District	Workplaces																Total								
	At family dwelling		Client's place		Formal office		Factory		Plantations		Construction sites		Mine		Shop			Different places		Street Stall		Pond/river		other	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F	M	F	M	F	M	F
<b>Muzaffargarh</b>	8	13	6	4	2	0	7	5	5	1	4	0	1	0	6	3	2	0	2	1	2	5	3	2	91
	21		10		2		11		15		4		1		9		2		3		7		5		
<b>%age</b>	23		10.		2.1		12		16.4		4.4		1		9.		2.2		3.		7.6		6.6		
			9		9										8		3								
<b>Chakwal</b>	1	14	8	2	6	1	1	3	10	2	1	0	9	2	1	8	7	2	9	3	6	4	3	2	174
	3				5		1		2				4												
	27		10		7		18		31		12		11		22		9		12		10		5		
<b>%age</b>	15.5		5.8		4.1		5.3		17.8		6.9		6.3		12.6		5.2		6.9		5.8		5.2		

The most common industry for working children in the district Chakwal was in agriculture. 17.8 percent of children were working in various activities in farms and cultivation of crops along with their adult family members. The common workplace where most of the children were working in district Muzaffargarh was his/her

family dwelling. I.e. children were engaged for various household activities like Shopping for household, cooking, cleaning utensils/house, washing clothes, caring for children/old/sick and other household tasks. 21 percent of children were involved in such tasks.



**Table 4:** Number of children working in adverse environmental conditions in both districts

District	Number and percent of Working Children in Adverse Environmental Conditions														
	Dust/	Fumes	Noise	Exposure	Dangerous tools	Working with sharp tools	Working at height	Working in extreme hot environment	Working with toxic chemicals	Insufficient ventilation	Chemicals	Wild animals	Exposure	Total	Percentage
<b>Chakwal</b>	12	9	10	7	13	2	8	4	2	8	9	7	2	93	53.4%
<b>Muzaffargarh</b>	4	9	6	8	10	1	7	4	1	6	4	6	3	69	75.8%

The percentage of working children in adverse environment conditions was higher in Muzaffargarh (75.8%) than in Chakwal (53.4%). It was indicated through data that in Chakwal dust and fumes, working with dangerous tools, noise and vibrations from various machines and exposure with toxic chemicals were the most

adverse environmental conditions in which percentage of working children was high. On the other hand, conditions in Muzaffargarh were alarming. Majority of the children were working in high-risk environmental conditions i.e. working with sharp tools, fire, work at height, extreme hot environment.

**Table 5:** Number of work-related injuries/ illnesses among children (5-17 age) working in district Chakwal and Muzaffargarh

<b>Injury/illness</b>	<b>Chakwal</b>	<b>Muzaffargarh</b>
Superficial injuries or open wounds (such as cuts, bruises, scrapes, scratches, punctures, etc.)	16	11
Fractures (for example broken bones, broken arms, fingers, feet, legs, etc.), Dislocations, sprains, or stains	8	5
Burns, corrosions, scalds, or frostbite (burns or damage to your skin or your body by fire, high temperatures)	9	4
Breathing problems	12	9
Eye problems (eyes hurt, blurry vision, get too many tears, or very dry eyes, eyes get red or itchy)	5	7
Skin problems (rashes, irritations)	14	8
Stomach problems / diarrhea	3	2
Fever	4	5
Insomnia (lack of sleep / little sleep/ cannot sleep even when you try)	2	1
Extreme fatigue/ extremely tired	11	5
<b>Total</b>	<b>84 (48%)</b>	<b>57 (62%)</b>

The table above showed that Work related injuries and illness in Chakwal indicated as (48%) and Muzaffargarh (62%). It showed higher injury and illness rate in districts Chakwal rather Muzaffargarh. In district Chakwal, superficial

injuries breathing problems skin problems and extreme fatigue were indicated in data. Thus, in Muzaffargarh data superficial injuries and open wounds, breath problems, stomach problems skin problems were indicated higher.

**Table 6:** No. of work-related injuries among children (5-17 ages) at various workplaces in district Chakwal and Muzaffargarh

	At fa mi ly D we lli ng 27	Clie n's pla ce 10	Form al offic e 7	Fact ory / Ateli er 18	Plant ation/ farm / garde n 31	Constr uction sites 12	Min e / quar ry 11	Sho p /rest aura nt / hote l/ tea stall 22	Diff erent plac es (mo bile)	Fixe d, stree t or mar ket stall 12	Pond / lake / river 10	Total
<b>Chakwal</b>	16		8	9	12	5	14	3	4	2	11	84 (48%)
<b>Muzaffargarh</b>	11		5	4	9	7	8	2	5	1	5	57 (52%)

The table indicated that work related injuries among children (5-17 ages) in district Chakwal and Muzaffargarh. Chakwal have (48%) injuries rate which is higher than Muzaffargarh (52%).

4.1. Hypotheses Results

**Table 7:** Comparison of Percentage of child labor

H<sub>01</sub>: There is highly significant difference between percentage of working children in Chakwal and Muzaffargarh district.

	N	Mean	Proportion	t-value	Std.error	p value
<b>Chakwal</b>	174	21.67	8.50%	-7.05	0.016	0.00
<b>Muzaffargarh</b>	91	16.23	19.70%			

Proportions significantly different at 99% "

Table above indicated that t value was -7.05 and p value was 0.00 which is less than 0.05 level of significance, which indicated that there is highly significant difference between working children in Chakwal and Muzaffargarh district. The mean score of district Chakwal (21.67) was greater than mean score of district Muzaffargarh (16.23).

Thus, it was concluded that hypothesis was accepted at 0.05 level of significance, the hypothesis stands approve. Conclusion: There is highly significant difference between percentage of child labor force in Chakwal and Muzaffargarh district.

**Table 8:** Comparison of Percentage of working children in 5-17 Age Group

H<sub>02</sub>: There is significant difference in percentage of working children (5-17 age) in various workplace of district Chakwal and Muzaffargarh

	N	Mean	Proportion	z-value	Std.error	p value
<b>Chakwal</b>	174	31.02	18.90%	-4.234	0.050	0.03
<b>Muzaffargarh</b>	91	34.04	40.00%			

Proportions significantly different at 99%

Table above indicated that t value was -4.234 and p value was 0.03 which is less than 0.05 level of significance, which indicated that there is highly significant difference in percentage of working children (5-17 age) in various workplace of district Chakwal and Muzaffargarh. The mean score of district Chakwal (31.02) was less than

mean score of district Muzaffargarh (34.04). Thus, it was concluded that hypothesis was accepted at 0.05 level of significance, the hypothesis stands approve. Conclusion: There is significant difference in percentage of working children (5-17 age) in various workplace of district Chakwal and Muzaffargarh.

**Table 9:** Comparison of Adverseable Conditions in Labor force

H<sub>03</sub>: There is significant difference in percentage of children (5-17 age) working in adverse environmental conditions in Chakwal and Muzaffargarh district.

	N	Mean	Proportion	t-value	Std.error	p value
<b>Chakwal</b>	174	10.534	53.45%	-3.548	0.050	0.00
<b>Muzaffargarh</b>	91	15.751	75.82%			

Proportions significantly different at 99%

Table above indicated that t value was -3.548 and p value was 0.00 which is less than 0.05 level of significance, which indicated that there is highly significant difference between percentage of children (5-17 age) working in adverse environmental conditions in Chakwal and Muzaffargarh district. The mean score of district Chakwal (10.534) was less than mean score of

district Muzaffargarh (15.751). thus, it was concluded that hypothesis was accepted at 0.05 level of significance, the hypothesis stands approve. Conclusion: There is significant difference in percentage of children (5-17 age) working in adverse environmental conditions in Chakwal and Muzaffargarh district.

**Table 10:** Comparison of Adverseable Conditions in Labor force

H<sub>04</sub>: There is significant difference in percentage of working children (5-17 age) having work-related injuries/ illnesses in various sectors in district Chakwal and Muzaffargarh

	<b>N</b>	<b>Mean</b>	<b>Proportion</b>	<b>t-value</b>	<b>Std.error</b>	<b>p value</b>
<b>Chakwal</b>	174	23.04	5.20%	-6.935	0.015	0.00
<b>Muzaffargarh</b>	91	24.22	15.50%			

Proportions significantly different at 99%

Table above indicated that t value was -6.935 and p value was 0.00 which is less than 0.05 level of significance, which indicated that there is highly significant difference in percentage of working children (5-17 age) having work-related injuries/ illnesses in various sectors in district Chakwal and Muzaffargarh. The mean score of district Chakwal (23.04) was less than mean score of district Muzaffargarh (24.22). Thus, it was concluded that hypothesis was accepted at 0.05 level of significance, the hypothesis stands approved. Conclusion: There is significant difference in percentage of working children (5-17 ages) having work-related injuries/ illnesses in various sectors in district Chakwal and Muzaffargarh.

## 5. Conclusion

Environmental health and safety issues in working children in is a complex issue that calls for a clear understanding of its social, economic, cultural, and political causes and drivers. The results provided here are bases for conducting further analyses with the aim of eliminating all forms of child labor especially in the hazardous occupations. Children are more susceptible to this disease than adults due to bone growth, rapid development of organs and tissues, risk of hearing loss, increased need for food and rest, increased intake of chemicals, and increased body size. Child labor and adolescent hazardous work is a complex issue which calls for a wide array of coordinated policy responses from

different actors targeting areas such as education, social protection, labor markets, and legal standards and regulation. Some potential policy mechanisms are detailed below based on policies and programs which have been successful in other contexts. A full assessment should be made prior to implementing these in the context of Punjab, preferably collecting evidence on their effectiveness through rigorous impact evaluations that are gender and age sensitive and consider the particularities of each division and district in the province. Intensive attention, research, and policy and practical decisions are urgently needed to improve the working environment of children. Governments, workers, employers and the public all have a responsibility to control certain psychological risks to children. Given the current situation, there is an urgent need for social, political, and technological interventions, quality research, appropriate laws and regulations, and comprehensive policies for better child labor planning and management to improve child labor conditions.

The future of our country lies in the well-being of our children. Therefore, it is important to protect the nation's health from premature birth, which negatively affects the intellectual, physical, educational, and spiritual development of children. It's about saving children from social injustice and life-threatening lack of education and giving them the opportunity to grow up healthy, normal, and happy.

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