

# Morbidity Profile of Child Labor at Gem Polishing Units of Jaipur, India

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## Abstract

**Background:** There are millions of working children worldwide. Several causes are suggested for this social evil of which poverty plays a significant role in whether a child will work.

**Objective:** To determine the morbidity profile in the working children of gem polishing units of Jaipur, India and assess some of its associated socio-economic factors.

**Methods:** The present cross-sectional study included 586 gem polishing working children. Using interview, the demographic characteristics, occupational and clinical history of participants were recorded. The reason for taking up the job, income from the job and their desire to attend the school were also asked to assess the social causes of child labor in this region.

**Results:** The mean±SD age of the working children was 11.3±5.3 years. In most of the instances, parents compelled the child to take up the job. Supposed to increase the family income substantially, the child labor activity failed to do so. On the other hand, the children suffered from several occupational health problems like eyestrain, headache, gastrointestinal complaints (eg, abdominal pain, nausea, vomiting, and diarrhea), musculoskeletal symptoms (eg, back pain, pain in limbs, neck pain, and joint pains) and skin diseases (eg, scabies, dermatitis).

**Conclusion:** It seems that the social factors forcing the children to work in the studied region, result in deterioration of their health and affect their growth.

**Keywords:** Socioeconomic factors; Child labor; Child; Employment; Work; Jewelry

## Introduction

Child labor is one of the major problems in many developing countries. According to International Labour Organization (ILO) estimates, there are 351.7 million economically active children in the world (210.8 million aged 5–14, and 140.9 million aged 15–17 years). Nearly 170 million of these children are involved in hazardous work (111 million aged 5–14; 59 million aged 15–17).<sup>1</sup> As a developing country, India has an increasing incidence

of working children and related physical, psychological and social problems.<sup>1</sup>

The informal economy harbors most child labor. The “informal sector” is the part of the economy that includes the income-generating activities carried out by the majority of the urban poor. Further as it is not recognized or protected under the legal and regulatory frameworks, informal workers have a high degree of vulnerability.<sup>2</sup> The informal economy is spread across all economic sectors and may be closely linked to formal sector production, for ex-

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ample, in situations where formal sectors outsource work to the informal economy.<sup>2</sup>

Child labor is a complex problem and numerous factors influence whether or not children work. Several causes are suggested for this social evil. Family poverty plays a significant role for child labor.<sup>3</sup> Wide-scale poverty compels parents to encourage child labor activities with the assumption that more working hands will enhance the income of the family, thereby, result in alleviation of poverty. Further to keep alive the family tradition, the parents wish their kids to learn and grow in the same occupation, though many times the child has desire to attend school like their peers.

The growth and development of working children is affected as, at their workplace, they are exposed to toxic and deadly chemicals.<sup>4</sup> Continuous work in sitting postures at ill-lighted and ill-ventilated room affects the physical growth, while verbal and physical child abuse has its impact on social and mental growth of the child.

The gem polishing industry at Jaipur, India, is an informal sector industry, which employs substantial proportion of children. Approximately, 200 000 people are employed in this industry of which about 20 000 are children. The workers are not covered with any health service schemes. In this industry, the waste materials of organized sectors are purchased by the parents as raw material for the cottage industry and which is then passed through various processes to make a final product to be sold in the market. All these processes are carried out in a workplace with poor ventilation, illumination and improper workstations. Therefore, this is the first attempt to find out the baseline information about the morbidity status of these children.

In the gem polishing industry, the raw stones are cut with the help of rotating saw to remove parts containing impurities. This is followed by separating the raw stones based on their colors. After sorting, using a rotating wheel, the stones are pre-shaped as desired and then calibrated to the appropriate size by various calipers. This is followed by faceting the stone so that the multiple facets using the principle of refraction give shine to the stone. Finally, these stones are polished using chromic oxide powder and quartz powder to increase the shine and luster. Except for making of jewelries, sorting and marketing, the children work in almost all the processes and thus are prone for hazards associated with them.

#### TAKE-HOME MESSAGE

- Child labor is one of the major problems in many developing countries.
- The informal economy harbors most child labor.
- Child labor is a complex problem and numerous factors influence whether or not children work.
- The gem polishing industry at Jaipur, India, is an informal sector industry, which employs substantial proportion of children, mostly females.
- Except for making of jewelries, sorting and marketing, the children work in almost all the processes and thus are prone for hazards associated with them.
- The duration of exposure suggests that though most of the children have taken the job only recently, many of them work for almost six hours or more per day under unsafe working conditions of ill-ventilation, poor illumination, awkward posture, unhygienic conditions, and dust exposures.
- The social reasons forcing a child to take up the job not only affect their education but also endanger their general health by exposing them to various hazards.
- Child labor is a social evil resulting from social factors like poverty and family cultural influences.

## Materials and Methods

The present cross-sectional study included 586 working children aged <18 years in the gem polishing industry at Jaipur, India. In an interview the demographic characteristics, occupational and clinical history of participants were recorded on a pre-designed data collection sheet containing questions such as the reason for taking up the job, income from the job and the participants' desire to attend the school to assess the social causes of child labor. The participants were also asked about their current health problem and its relationship with their work.

Data were entered in MS Excel®, and analyzed with Epi Info® ver 3.3 (CDC, Atlanta, USA).

## Results

The present study included 586 working children of which 270 (46.1%) were boys and 316 (53.9%) were girls. The mean±SD age of the child laborers was 11.3±5.3 years. The duration of exposure for the child laborers was 20.2±0.9 months, and the daily work hours was 6.3±1.9.

Occupational and socio-economic characteristics of child labor at gem polishing industries of Jaipur are presented in Table 1. In most instances, parents compelled the child to take up the job. Although the job was supposed to increase the family income substantially, more than half of the working children earned less than five rupees (US\$ 0.08) per day (Table 1).

Table 2 shows the common symptoms reported by the study subjects. The most frequent complaints were injuries to finger (37.5%), eyestrain (29.5%), headache (28.8%), and respiratory symptoms (27%). Other complaints included gastrointestinal symptoms (*eg*, abdominal pain, nausea, vomiting, and diarrhea) in 10.1%, musculoskeletal symptoms (*eg*, back pain,

**Table 1:** Characteristics of 586 studied participants

Characteristics	Frequency (%)
Age group (yrs)	
<10	90 (15.4)
10–14	459 (78.3)
≥15	37 (6.3)
Duration of employment (months)	
<12	209 (35.7)
12–23	129 (22.0)
24–35	112 (19.1)
36–47	57 (9.7)
48–59	37 (6.3)
≥60	42 (7.2)
Working hours per day	
<4	40 (6.8)
4–7	415 (70.8)
8–11	124 (21.2)
≥12	7 (1.2)
Income per day in rupees (US\$)	
<5 (<0.08)	326 (55.6)
5-9 (0.08–0.15)	117 (20.0)
10-19 (0.17–0.32)	95 (16.2)
≥20 (≥0.33)	48 (8.2)
Reasons for taking up the job*	
Father compelled	158 (54.9)
Mother compelled	66 (22.9)
Both parents compelled	34 (11.8)
Own choice	28 (9.7)
Others	2 (0.6)

\*Included only 288 participants who responded to this question.

pain in limbs, neck pain, and joint pains) in 4.9% and skin disease (*eg*, scabies, and dermatitis) in 1.5%.

## Discussion

In this study we witnessed a high proportion of female laborers. This may be attributed to the fact that females constitute cheap laborers. However, such a large proportion of female child laborers further worsen the female literacy rates in the

**Table 2:** Frequency of various symptoms in 586 participants

Symptoms	Frequency (%; 95% CI)
Respiratory	110 (18.8; 15.6–21.9)
Gastrointestinal	59 (10.1; 7.6–12.5)
Musculoskeletal	29 (5.0; 3.2–6.7)
Skin-related	9 (1.5; 0.5–2.5)
Eyestrain	172 (29.4; 25.7–33.1)
Headache	169 (28.8; 25.2–32.5)
Repeated finger injuries	220 (37.5; 33.6–41.5)

country.

The duration of exposure suggests that though most of the children have taken the job only recently, many of them work for almost six hours or more per day under unsafe working conditions of ill-ventilation, poor illumination, awkward posture, unhygienic conditions, and dust exposures. These unsafe working conditions along with working beyond bodily capacity by these children will set in an early fatigue. All these factors are also known to affect the human health in adverse ways independently.

Furthermore, the study revealed that the parents, in most instances, compel the child to take up the job due to cultural influence and their desire to keep up the family tradition. This may also be due to the fact that the child often find himself/herself forced to drop out of school in favor of working to help supplement their family income or simply to support himself/herself; sometimes their family cannot afford to send the child to school and the child, left with few options, may turn to labor.<sup>5</sup> However, apparently, the second reason does usually not help the family cause as the money earned by the working child at the cost of loss of education. Therefore, special attention has to be paid to make

education attractive and affordable for all children. It has also been documented at a community level, that the expansion of the quality and availability of education have served to reduce rates of child labor.<sup>6</sup> Ironically, the opposite effect can also occur; education can make children more productive, raising their prospective earnings and providing an inducement to entering the labor force. Therefore, while curbing this social evil, efforts should also be made to counsel the parents about the ill effects of working in hazardous occupations.

The social reasons forcing a child to take up the job not only affect their education but also endanger their general health by exposing them to various hazards. In the present study, almost a quarter of the working children had one or other morbidities. The most common morbidity was repeated finger injuries. This is important as such injuries combined with poor personal hygiene may result in wound contamination and more complications. The reported eyestrain and headache may partly be attributed to the high degree of visual concentration, which is required for the processes like sorting and calibration of semi-precious stones. Moreover, the poor personal hygiene may also be associated with poor ocular hygiene that would cause more problems as contamination of eyes with certain chemicals such as chromium oxide, quartz powder, *etc*, causes irritation and lacrimation.

Child labor is a social evil resulting from social factors like poverty and family cultural influences. To face this menace, a holistic approach should be applied, as it not only results in illiterate future workers but also leads to more unhealthy workforce for the country.

The present study had a cross-sectional design, which limits the ascertainment of causal effect relationship. This can be overcome with future studies using analytical epidemiological study design. Further-



more, as the present study was conducted only in one set up, the generalizability of the findings to all those engaged in similar work or to all those working children is limited.

**Conflicts of Interest:** None declared.

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