# Effect of First Aids Program on Workers′ Knowledge and Practices in Kom Hamada Spinning and Weaving Factory

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## Abstract

The worker is the first person to apply first aids during the accidents that might occur at workplace. Therefore, it is extremely fundamental for workers to have satisfactory knowledge about first aids. **Aim**: evaluate the effect of first aids program on knowledge and practices of workers in kom Hamada spinning and weaving factory. **Hypothesis:** Textile workers who engage in first aids program demonstrate more significant level of knowledge and practices than workers who do not. **Subjects and Methods:** quazi experimental research design was adopted to conduct the study. The study was conducted at Kom Hamada spinning and weaving factory. **Sample**: the study was conducted on all textile workers in the spinning and weaving factory (300 workers). **Tools**: three tools were utilized to carry out this study, tool (I); workers' structured interview Questionnaire, tool (II) workers' knowledge interview questionnaire, tool (III); observation checklist**. Results**: it was found that before implementation of the educational intervention, all workers had poor knowledge and practices concerning first aids, while after the educational intervention conduction, more than three quarters had good knowledge and practices. **Conclusion**: the educational intervention was successful in raising the awareness of the workers about first aids. **Recommendation**: conducting training programs for all workers everywhere about first aids.

**Key words:** Educational Intervention, First Aids, spinning and weaving Factory.

## Introduction

Workplace injuries constitutes an impressing issue in the specialty of occupational health in developing nations **(Tadesse S, 2016)**. This is mainly because occupational health focus on avoidance of work related injuries which is very common in poorer countries **(Takala J,2017)**.According to several studies conducted in low income countries , the whole rate of injuries was approximated at 40,000 per 100,000 workers yearly **(Gebremichael G ,2015)**.Globally, a huge number of injury cases happen annually **(Musa,Jemal , 2019).**

A study conducted in Ethiopia 2020 revealed that the prevalence of occupational injury among laborers in Bahir Dar Textile Share Company were 42.7% ( one year) and 6.7% (fourteen days) . In addition, the one year report from all the participants reveals that abrasion (10.7%) and eye injury (7.7%) were the commonest injuries. Furthermore, the most recurrent body parts were hands (12.7%) and eyes (7.7%) . Moreover, the main reasons for injuries were slipping and machine **(Damtie D,2020).**

Accidents can take place anywhere at any time. The sequel of unintended accidents can be life threatening. Unintentional accidents need immediate and convenient lifesaving care before the casualty get major treatment **(Joseph N,2015)**. This life saving care or first aids is an assessment and interventions that can be implemented by a person nearby immediately with least possible or without medical equipment. Therefore, it is vital to have basic knowledge of first aids. The ultimate goal of first aids is to prevent the possible harm at a certain time before reaching the suitable health care facility **(Joseph N, 2014)**.

The consequences of occupational accidents includes personal and social expenses because of social imbalance in case of ailments, joblessness, problematic recovery, mental impacts and family financial issues. Providing first aids procedures after workplace accident can prevent several undesired outcomes on the health of laborers and the company. Hence, all workers should be trained on first aids measures to maintain occupational safety **(Pek J, 2017)**.

First aids procedures must be learned to broad range of people within the community,

enterprises and health care institutions to ensure good outcomes during emergencies **(Salciccioli J,2017; Raje S,2017)**. Although, lay people often criticized for inadequate knowledge and skills when providing first aids **(Shinde V, 2015)**.there are several reasons for basic lifesaving illiteracy such as insufficient training, weak self-efficacy, and restricted practices **(Engeland A,2014)**.

The occupational health nurse assume a significant role in health maintenance of workers, accidents prevention, first aids provision for laborers during emergencies and guaranteeing workplace safety. Also, they can conduct health education sessions about occupational hazards, occupational safety, healthy life style, smoking cessation. Moreover, she provide counseling for workers according to their needs and health problems, screen work environment for occupational hazards, advise workers regarding personal protective equipment commitment **(Smedley J, 2013)**.

**Significance of the study**

Disastrously, training on first aids does not rise the percentage of help. Consequently, the inspiration to assist others is fundamental and the assisting rate can be expanded by training courses on first aids that incorporate methodologies to beat inhibitors emergency helping conduct **(Van S,2018).** One significant hindrance and fundamental worry of laypersons about giving first aids to intense sick or harmed individuals is the dread to commit errors. In Austria 68% of the members expressed that they would not provide first aids since they dreaded to accomplish mistakes. Various researches indicated that there is a reasonable relation between the provision of accurate first aid measures and the previous training courses on first aids. This shed the light on the necessity of general society training on first aids **(Volker T, 2017).**

Educating the public about First aids is essential for ensuring good quality of care in case of emergencies. A study carried out in Germany revealed that most of the respondents didn't receive training courses on first aids and proved that there was a strong relation between the quality of first aids measures provisions and the previous training courses received on it **(Mauritz W, 2019).** Laypeople training on first aids measures is vital for creating healthy and safe community **(Joseph N,2014).** Hence, the present study aimed to evaluate the effect of first aids program on workers′ knowledge and practices in kom hamada spinning and weaving factory.

**Aim of the study:**

Evaluate the effect of first aids program on workers′ knowledge and practices in kom hamada spinning and weaving factory.

**Research hypothesis:**

Textile workers who engage in first aids program demonstrate more significant level of knowledge and practices than workers who do not.

**Materials and Methods**

**Materials**

**Research design**

Quasi experimental (pre-posttest) study design was carried out to demeanor this study

**Study setting:**

This study was done in Kom Hamada factory. The factory consists of two major departments (weaving and spinning). The weaving department consists of five sections namely (wrapping, sizing, starching, drawing in, weaving).The spinning department involve the following sections; bale opening, carding, combing and drawing, roving, spinning.

**Total population:**

Total number of laborers in the manufacturing facility have been 330 workers

**Study Sample:**

All laborers in the factory (300 workers) were included in the study after segregation of the pilot study (30 workers) from the total sample size.150 workers were selected as an experimental group and 150 workers were randomly selected as control group (every odds number assigned to experimental group and every even number assigned to control group).

**Tools for data collection:** the following tools were utilized for data collection

**Tool I: Workers' Structured Interview Questionnaire**

It was created by the researchers and is consisted of two parts. **The first part** included

socio-demographic characteristics of the workers as age, level of education, marital status, income, place of residence and crowding index. **The second part** included occupational data about the workers like department, years of experience, working hours per day, work schedule, working shift, availability of personal protective equipment, and history of workplace accident and injuries.

**Tool II: Workers' Knowledge Interview Questionnaire**

It was created by the researchers to assess the workers knowledge about first aids. It consisted of 70 items to assess general knowledge about first aids (5 items), fracture (11 items), burn (11 items), epistaxis (11 items), eye injuries (5 items), epilepsy (11 items), adult chocking ( 6 items), wound care (5 items), fainting (5 items).

**Scoring system**

The worker's knowledge about first aids were calculated for each item. Complete correct answer took (2), correct but incomplete answer took (1) and incorrect answer took (0). The total knowledge score was classified into 3 categories:

| Classification | Score |
|---|---|
| Good | 75%-100% |
| Fair | < 75%-50% |
| Poor | < 50% |

**Tool III: observation checklist**

An observational checklist was created by the researchers after reading the recent literature to evaluate first aids practices: the investigator used simulated cases with observational checklist to evaluate the first aids practices of the workers. The simulated cases covered eight scenarios including; fracture ( 8 items), epistaxis (7 items), burn (5 items) , adult chocking (4 items) , eye injuries (5 items), fainting (5 items), epilepsy ( 9 items) , and wound care ( 7 items ) .

**Scoring system**

The practice was sored (1) if it was correct, while if it was incorrect or not done it was scored (0). The total practices were categorized into three levels as the following:

| Classification | Score |
|---|---|
| Good | 75%-100% |
| Fair | < 75%-50% |
| Poor | < 50% |

**Tool Content Validity and Reliability:**

Tools of the study were tested for content validity by five community health nursing experts and the necessary modifications were done based on their recommendations. The reliability of the observational checklist was assured by utilizing Cronbach's Alpha test and the result was r= 0.78.

**Methods**

- Official letter was directed to the director of the factory to inform him about the study objectives and to obtain his permission to conduct the study.
- Tool I workers' structured interview questionnaire: it was developed by the researchers after reviewing the recent literature to assess socio-demographic characteristics, occupational data, and life style of the workers. Tool II workers' knowledge interview questionnaire: it was constructed by the experimenter after reading the up-to-dated references to assess the workers' knowledge regarding first aids. Tool III observation checklist was constituted by the researchers to evaluate the workers' practices concerning first aids.
- **Pilot study**: pilot study was conducted before data collection on a thirty workers (10% of the estimated sample) to detect any obstacles that may hinder collection of data and to guarantee unambiguity and appropriateness of tools.
- **Data collection phase**: collection of data took about five months from May 2021 to September 2021.
- **Educational intervention:** The study was conducted through the following phases:

**First Phase: preparation of the educational intervention:**

**I. Assessment phase**

- The investigators visit the factory and illustrate the questionnaire to the study participants.
- The researchers assess the worker's knowledge and practices about first aids by using tool II and tool III as pretest for both

groups to determine their learning needs in the first week before beginning the program.

**II. Planning phase**

The educational intervention of first aids was designed by the researchers for the studied sample according to their needs assessment and reviewing the recent literature. The program planning included the following steps:

**a) Setting the program objectives**

❖ **General objective**

To enhance worker's knowledge and practices regarding first aids.

❖ **Specific objectives**

At the end of the program , the laborers were able to:

- Define first aids
- List the content of first aids kit
- Differentiate between open and closed fracture
- Perform first aids measures for burn
- Apply first aids measures for nose bleeding
- Accomplish first aids measures for fracture
- Implement first aids measures for adult chocking
- Carry out wound care correctly
- Mention the degrees of burn and their characteristics

**b) Preparation of the content**

- The program content was prepared by the investigators to attain all the set objectives. It was created after thorough and detailed search, needs assessment results as well as workers characteristics.
- Various teaching strategies were utilized as lectures, group discussion, role play and brain storming.
- Variant teaching aids were applied to simplify and clarify teaching such as videos, slide data show, posters, and handout.

**Second Phase: Implementation of the Educational Intervention**

- This phase involved conduction of the planned educational intervention
- The workers were divided into small 10 groups to facilitate program application, each group contained around 15 workers. The sessions were given at the workers department during their break.
- The program content was divided into 9 sessions. Each session took about one hour
- At the beginning of the first session, the researcher explained the study aims, phases and the program sessions. The researchers focused on the necessity of constant presence and effective interaction. Handouts and booklets were distributed to the workers at the end of each session to ease remembering.
- Educational booklet was given to the study group before terminating every session and to the control group at the end of the program.

**Third Phase: Evaluation of the program**

- The program evaluation was done immediately and after three months of the completion of the intervention for the study group and the control one through posttest using tool II & tool III.

**Statistical analysis**

statistical package for social science (SPSS) version 20 was used for data analysis . Significance cut off value (p value) was set at p equal or less than 0.05. The next statistical procedures were employed:

- Descriptive: count, percentage, arithmetic mean, standard deviation
- Inferential: Chi-square test, Fisher's Exact or Monte Carlo correction, independent sample test
- Graphical presentation included bar graph

**Ethical consideration:**

- Permission was obtained from ethical committee in the Faculty of Nursing Damanhour University
- Permission was obtained to collect the data from the selected settings.
- Written consent was obtained from every worker participated in the study after explanation of the aim of the study and

participants were assured that collected data will be used only for the study purpose.

- A code number was used instead of names
- The program content was given to the control group at one session after completion of the study.

**Table (1): Displays distribution of the workers according to their personal and socio -demographic characteristics.** The total number included in the study was 300 (150 cases and 150 control). Concerning age, it ranged from 27-53 years with a mean of 45.7 ±5.5 among the study group, whereas among the control group 46.7 ±6.5. less than half (43.3%, 44%) of the study group and the control one were aged between 30 to less than 40 years. No statistical significant difference between both groups ($x^2$=4.974, $^{MC}$p= 0.174).

As regard to the level of education of the studied sample, the table portrays that less than half (45.3%) of the study group had secondary education compared to slightly more than half (51.3%) of the control group. on the other hand, the minority (10%, 8.7%) of both groups. No statistical significant difference between both groups ($x^2$=0.251, $^{MC}$p= 0.616). With respect to family income, the vast majority (98.7%, 96.7) of both groups had not enough income to meet the demands of their lives. No statistical significant difference between both groups ($x^2$= 0.000, $^{MC}$p=1.000).

**Table (2) shows distribution of the workers according to their occupational history and availability of safety measures in the workplace**

**.** Concerning years of experience, less than half (43.3%, 44%) of the study group and the control one respectively had experience of 15 years to less than 20 years old. However, less than one tenth (8.7%) of the study group had experience of less than 15 years old and a minority of the control group had experience of more than 30 years. No statistical significant difference between both groups ($x^2$= 4.974 ,$^{MC}$p=0.174 ).

Pertaining to daily working hours, the table depicts that the vast majority (92%) of the study group were working less than 8 hours per day compared to (86.7%) of the control one. No statistical significant difference between both groups ($x^2$= 3.31 7 ,$^{MC}$p= 0.162 ). With respect to work schedule, it was evident that more than three quarters (86%) of the study group had fixed shift, whereas more than half (60%) of the control group had rotating shifts (morning, evening, night). A statistical significant difference was found between both groups ($x^2$= 10.497,$^{MC}$p= 0.001). It also worth mentioning that all workers reported that they didn't receive any training programs about first aids .

Moreover, the results illustrated that more than half (68.7%, 52%) of both groups had history of workplace accident. It was evident that the accident resulted in injuries in (87.4%, 89.7%) of the study group and the control one respectively. Most of both groups injuries were cut wounds. Furthermore, all the study group and the control one (100%) reported that personal protective equipments were not available in the workplace. Pertaining to presence of first aid box in the workplace, the table showed that (66%,60.7%) of the study group and the control group respectively reported that it was available .

**Table (3): depicts the impact of first aids educational intervention on the study group.** It is apparent from the table that none of the study group were scored good knowledge regarding general information about first aids before the educational intervention implementation which significantly raised to more than three quarters (80%) after the program conduction ($X^2$ mc = 17.2, p=0.001). Regarding fracture, the table shows that before the educational intervention implementation none of the study group had good knowledge, whereas after the educational intervention execution, (56.7%) of the study group had good knowledge ($X^2$ mc =7.6, p=0,042). With respect to epistaxis, the results reveals that the vast majority (97.3%) of the study group had poor knowledge. However, after the program conduction (84.7%) of the study group had good knowledge ($X^2$ mc =24.5, p= 0.001).

In relation to burn, it is clear from the table that before the program implementation all the study group had poor knowledge. On the other hand after the educational intervention (73.3%) of the study group had good

knowledge ($X^2$ mc =25.7, p=0.001).As regards to adult chocking, all the study group were scored poorly before the program implementation, while after the implementation of the program, drastic change has occurred whereas more than three quarters (80%) had good knowledge ($X^2$ mc=20.1,p=0.001)

In relation to wound, the vast majority (93.3%) of the study group had poor knowledge before the educational intervention implementation. On the contrary, after the educational intervention performance (74.6%) of the study group had good knowledge ($X^2$mc = 21.5,p=0.001).

**Figure (I) shows Distribution of the study and control group according to total knowledge score after the program.** It is obvious from the figure that most (84%) of the study group had good knowledge regarding first aids after implementation of the program, whereas the vast majority of the control group (98.5%) had poor knowledge.

**Table (4): represent distribution of the control group according to their knowledge score before and after the program implementation.** It is obvious that there is no remarkable change of the control group knowledge score before and after program implementation. The results illustrate that all the control group had poor knowledge before and after the program implementation regarding general information about first aids, burn, adult chocking and fainting. With respect to epistaxis, the results reveals that the vast majority (99.3%) of the control group had poor knowledge before the educational intervention implementation which still the same percentage (99.3%) after the program implementation. The table also portrays that before the program implementation, the vast majority (96.7%, 98%, 98.7%,96.7) of the control group had poor knowledge regarding fracture, eye injuries, epilepsy and wound respectively, which slightly decreased to (95.3%, 96.7%, 98%, 96%).

**Figure (II): depicts distribution of the study group and control group according to total practices scores after the program implementation.** It is evident from the figure that more than three quarters (79%) of the study group had good first aids practices, while the vast majority of the control group (98.7%) had poor practices.

**Table (5): illustrates distribution of the study group according to their practices scores before and after the program implementation.** It is noticeable from the table all the control group were scored poor practices before the educational intervention implementation regarding epistaxis, burn, adult choking, eye injuries, fainting, and epilepsy. In contrast , after the program conduction, remarkable improvement was noticed in their practices whereas (50%, 51.4%, 65.3%, 38%, 58.7%, 72.7%) of the control group practices were good concerning epistaxis, burn, adult choking, eye injuries, fainting, and epilepsy respectively. Moreover, the table reveals that the vast majority (99.3%94%) of the control group had poor practices regarding fracture and wound care before the educational intervention. However, forceful change had occurred after the implementation of the educational intervention as less than three quarters (73.4%, 70%) of the control group had good practices. ($X^2$mc = 24.5, p=0.001), ($X^2$mc =23.5, p=0.001).

**Table (6): displays distribution of the control group according to their practices scores before and after the program implementation.** It is evident from the table that there is no significant change in the control group practices score before and after the program implementation.

**Table (1): Distribution of the workers according to their personal and socio -demographic characteristics**

| Socio-demographic & personal characteristics | Study group (n = 150) | | Control group (n = 150) | | Test of Significance |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| **Age in years** | | | | | |
| 25 <30 | 13 | 8.7 | 24 | 16 | $\chi^2$=4.974 $^{MC}p$ =0.174 |
| 30< 40 | 65 | 43.3 | 66 | 44 | |
| 40 <50 | 57 | 38 | 50 | 33.3 | |
| 50 <60 | 15 | 10 | 10 | 6.7 | |
| Min. – Max. | 28-53 | | 27-52 | | t=1.948 $^{MC}p$ =0.052 |
| Mean ± SD. | 45.7 ±5.5 | | 46.7 ±6.5 | | |
| **Level of education** | | | | | |
| Illiterate | 0 | 0.0 | 0 | 0.0 | $\chi^2$=0.251 $^{MC}p$ =0.616 |
| Read and write | 17 | 11.3 | 20 | 13.3 | |
| Primary education | 50 | 33.4 | 40 | 26.7 | |
| Preparatory education | 15 | 10 | 13 | 8.7 | |
| Secondary education | 68 | 45.3 | 77 | 51.3 | |
| University education | 0 | 0.0 | 0 | 0.0 | |
| **Family income** | | | | | |
| Enough | 2 | 1.3 | 5 | 3.3 | $\chi^2$=0.000 $^{MC}p$ =1.000 |
| Not enough | 148 | 98.7 | 145 | 96.7 | |
| **Place of residence** | | | | | |
| Rural | 144 | 96 | 139 | 92.7 | $\chi^2$=0.000 $^{MC}p$ =1.000 |
| Urban | 6 | 4 | 11 | 7.3 | |
| **Crowding index** | | | | | |
| ≤ 1.5 | 11 | 7.3 | 29 | 19.3 | $\chi^2$=11.497* $^{MC}p$ =0.001* |
| > 1.5 | 139 | 92.7 | 121 | 80.7 | |

$\chi^2$: **Chi square test** MC: **Monte Carlo** **t: independent sample test**

p: p value for comparing between **Study group and control group**

*: Statistical significant at $p \leq 0.05$

**Table (2):** Distribution of the workers according to their occupational history and availability of safety measures in the workplace

| Occupational data | Study group (n = 150) | | Control group (n = 150) | | Test of Significance |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| **Years of experience** | | | | | |
| <15 years | 13 | 8.7 | 24 | 16 | $\chi^2$=4.974 |
| 15- | 65 | 43.3 | 66 | 44 | $^{MC}p$ =0.174 |
| 20- | 57 | 38 | 50 | 33.3 | |
| 30+ | 15 | 10 | 10 | 6.7 | |
| Mean ± SD | 27.2 ± 6.6 | | 23.2 ±5.6 | | |
| **Daily working hours** | | | | | |
| Less than 8 hours/day | 138 | 92 | 130 | 86.7 | $\chi^2$=3.31 7 |
| More than 8 hours / day | 12 | 8 | 20 | 13.3 | $^{MC}p$ =0.162 |
| Mean ± SD | 9.0±2.5 | | 9.0±3.5 | | |
| **Work schedule** | | | | | |
| Fixed | 129 | 86 | 60 | 40 | $\chi^2$=10.497* |
| Rotating | 21 | 14 | 90 | 60 | $^{MC}p$ =0.001* |
| **Previous training programs about first aids** | | | | | |
| Yes | 0 | 0.0 | 0 | 0.0 | $\chi^2$=5.316 |
| No | 150 | 100 | 150 | 100 | $^{MC}p$ =0.162 |
| **History of workplace accident** | | | | | |
| Yes | 103 | 68.7 | 78 | 52 | $\chi^2$=11.3 97* |
| No | 47 | 31.3 | 72 | 48 | $^{MC}p$ =0.001* |
| **Workplace accident related injuries** | | | | | |
| Yes | 90 | 87.4 | 70 | 89.7 | $\chi^2$=4.31 7 |
| No | 13 | 12.6 | 8 | 10.3 | $^{MC}p$ =0.162 |
| **Type of workplace injuries** | | | | | |
| Burn | 15 | 16.7 | 10 | 14.3 | $\chi^2$=3.31 7 |
| Cut Wound | 40 | 44.4 | 48 | 68.6 | $^{MC}p$ =0.152 |
| Fracture | 35 | 38.9 | 12 | 17.1 | |
| **Availability of PPE in workplace** | | | | | |
| Yes | 0 | 0.0 | 0 | 0.0 | $\chi^2$=0.551 |
| No | 150 | 100 | 150 | 100 | $^{MC}p$ =0.420 |
| **Presence of first aid box in the workplace** | | | | | |
| Yes | 99 | 66 | 91 | 60.7 | $\chi^2$=0.451 |
| No | 51 | 34 | 59 | 39.3 | $^{MC}p$ =0.410 |

$\chi^2$: **Chi square test** MC: **Monte Carlo**
p: p value for comparing between **Study group and control group**
*: Statistical significant at $p \leq 0.05$

**Table (3):** Distribution of the study group according to their knowledge score before and after the program implementation

| Knowledge items | Phase | | | | $X^{2\,mc}$ (P) |
|---|---|---|---|---|---|
| | Before | | After | | |
| | No. | % | No. | % | |
| **General information** | | | | | |
| Poor | 140 | 93.3 | 10 | 6.7 | 17.2 |
| Fair | 10 | 6.7 | 20 | 13.3 | (0.001)* |
| Good | 0 | 0.0 | 120 | 80 | |
| **Fracture** | | | | | |
| Poor | 150 | 100 | 15 | 10 | 7.6 |
| Fair | 0 | 0 | 50 | 33.3 | (0.042) * |
| Good | 0 | 0 | 85 | 56.7 | |
| **Epistaxis** | | | | | |
| Poor | 146 | 97.3 | 0 | 0 | 24.5 |
| Fair | 4 | 2.7 | 23 | 15.3 | (0.001)* |
| Good | 0 | 0 | 127 | 84.7 | |
| **Burn** | | | | | |
| Poor | 150 | 100 | 0 | 0 | 25.7 |
| Fair | 0 | 0 | 40 | 26.7 | (0.001)* |
| Good | 0 | 0 | 110 | 73.3 | |

| Knowledge items | Phase | | | | $X^{2\ mc}$ (P) |
|---|---|---|---|---|---|
| | Before | | After | | |
| | No. | % | No. | % | |
| **Adult chocking** | | | | | |
| Poor | 150 | 100 | 0 | 0 | 20.1 |
| Fair | 0 | 0 | 30 | 20 | (0.001)* |
| Good | 0 | 0 | 120 | 80 | |
| **Eye injuries** | | | | | |
| Poor | 150 | 100 | 5 | 3.3 | 22.5 |
| Fair | 0 | 0 | 53 | 35.3 | (0.001)* |
| Good | 0 | 0 | 92 | 61.4 | |
| **Fainting** | | | | | |
| Poor | 147 | 98 | 0 | 0 | 24.5 |
| Fair | 3 | 2 | 23 | 15.3 | (0.001)* |
| Good | 0 | 0 | 127 | 84.7 | |
| **Epilepsy** | | | | | |
| Poor | 150 | 100 | 5 | 3.3 | 17.5 |
| Fair | 0 | 0 | 25 | 16.7 | (0.001)* |
| Good | 0 | 0 | 120 | 80 | |
| **Wound** | | | | | |
| Poor | 140 | 93.3 | 7 | 4.7 | 21.5 |
| Fair | 10 | 6.7 | 31 | 20.7 | (0.001)* |
| Good | 0 | 0 | 112 | 74.6 | |

$X^2$ mc: Mc-Nemar test for related groups *: Statistical significant at $p \leq 0.05$

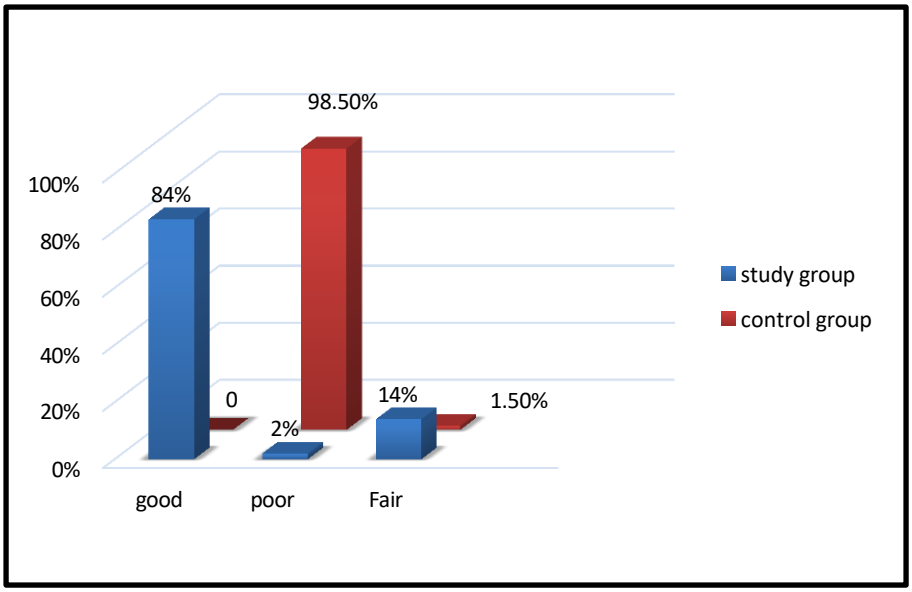


**Figure (I):** Distribution of the study and control group according to total knowledge score after the program implementation

**Table (4):** Distribution of the control group according to their knowledge score before and after the program implementation

| Knowledge items | Phase | | | | $X^{2\ mc}$ (P) |
|---|---|---|---|---|---|
| | Before | | After | | |
| | No. | % | No. | % | |
| **General information** | | | | | |
| Poor | 150 | 100 | 150 | 100 | |
| Fair | 0 | 0 | 0 | 0 | 0.22 |
| Good | 0 | 0 | 0 | 0 | (0.893) |
| **Fracture** | | | | | |
| Poor | 145 | 96.7 | 143 | 95.3 | 0.48 |
| Fair | 5 | 3.3 | 7 | 4.7 | (0.799) |
| Good | 0 | 0 | 0 | 0 | |
| **Epistaxis** | | | | | |
| Poor | 149 | 99.3 | 149 | 99.3 | |
| Fair | 1 | 0.7 | 1 | 0.7 | 1.5 |
| Good | 0 | 0 | 0 | 0 | (0.234) |
| **Burn** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 1.3 |
| Fair | 0 | 0 | 0 | 0 | (0.256) |
| Good | 0 | 0 | 0 | 0 | |
| **Adult chocking** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 0.43 |
| Fair | 0 | 0 | 0 | 0 | (0.569) |
| Good | 0 | 0 | 0 | 0 | |
| **Eye injuries** | | | | | |
| Poor | 147 | 98 | 145 | 96.7 | 2.3 |
| Fair | 3 | 2 | 5 | 3.3 | (0.234) |
| Good | 0 | 0 | 0 | 0 | |
| **Fainting** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 0.35 |
| Fair | 0 | 0 | 0 | 0 | (0.893) |
| Good | 0 | 0 | 0 | 0 | |
| **Epilepsy** | | | | | |
| Poor | 148 | 98.7 | 147 | 98 | 0.47 |
| Fair | 2 | 1.3 | 3 | 2 | (0.369) |
| Good | 0 | 0 | 0 | 0 | |
| **Wound** | | | | | |
| Poor | 145 | 96.7 | 144 | 96 | 1.7 |
| Fair | 5 | 3.4 | 6 | 4 | (0.473) |
| Good | 0 | 0 | 0 | 0 | |

$X^2$ mc: Mc-Nemar test for related groups *: Statistical significant at $p \leq 0.05$

**Table (5):** Distribution of the study group according to their practices scores before and after the program implementation

| Practices items | Phase | | | | $X^{2\ mc}$ (P) |
|---|---|---|---|---|---|
| | Before | | After | | |
| | No. | % | No. | % | |
| **Fracture** | | | | | |
| Poor | 149 | 99.3 | 20 | 13.3 | |
| Fair | 1 | 0.7 | 20 | 13.3 | 24.5 |
| Good | 0 | 0 | 110 | 73.4 | (0.001)* |
| **Epistaxis** | | | | | |
| Poor | 150 | 100 | 5 | 3.3 | 22.5 |
| Fair | 0 | 0 | 70 | 46.7 | (0.001)* |
| Good | 0 | 0 | 75 | 50 | |
| **Burn** | | | | | |
| Poor | 150 | 100 | 23 | 15.3 | 27.4 |
| Fair | 0 | 0 | 50 | 33.3 | (0.001)* |
| Good | 0 | 0 | 77 | 51.4 | |
| **Adult chocking** | | | | | |
| Poor | 150 | 100 | 12 | 8 | 25.5 |

| Practices items | Phase | | | | $X^{2\,mc}$ (P) |
|---|---|---|---|---|---|
| | Before | | After | | |
| | No. | % | No. | % | |
| Fair | 0 | 0 | 40 | 26.7 | (0.001)* |
| Good | 0 | 0 | 98 | 65.3 | |
| **Eye injuries** | | | | | |
| Poor | 150 | 100 | 30 | 20 | 18.3 |
| Fair | 0 | 0 | 63 | 42 | (0.001)* |
| Good | 0 | 0 | 57 | 38 | |
| **Fainting** | | | | | |
| Poor | 150 | 100 | 19 | 12.7 | 17.4 |
| Fair | 0 | 0 | 43 | 28.7 | (0.001)* |
| Good | 0 | 0 | 88 | 58.7 | |
| **Epilepsy** | | | | | |
| Poor | 150 | 100 | 11 | 7.3 | 19.5 |
| Fair | 0 | 0 | 30 | 20 | (0.001)* |
| Good | 0 | 0 | 109 | 72.7 | |
| **Wound** | | | | | |
| Poor | 141 | 94 | 5 | 3.3 | 23.5 |
| Fair | 9 | 6 | 40 | 26.7 | (0.001)* |
| Good | 0 | 0 | 105 | 70 | |

- $X^2$ mc: Mc-Nemar test for related groups *: Statistical significant at $p \leq 0.05$

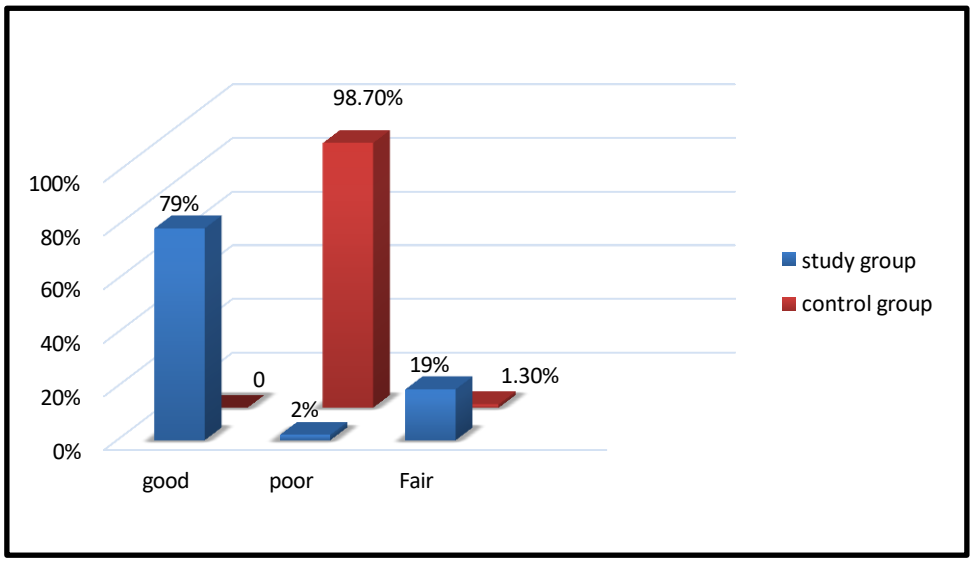


**Figure (II):** distribution of the study group and control group according to total practices scores after the program implementation

**Table (6):** Distribution of the control group according to their practices score before and after the program implementation

| Practices items | Phase | | | | $X^{2\,mc}$ (P) |
|---|---|---|---|---|---|
| | Before | | After | | |
| | No. | % | No. | % | |
| **Fracture** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 2.3 |
| Fair | 0 | 0 | 0 | 0 | (0.893) |
| Good | 0 | 0 | 0 | 0 | |
| **Epistaxis** | | | | | |
| Poor | 148 | 98.7 | 148 | 98.7 | 1.7 |
| Fair | 2 | 1.3 | 2 | 1.3 | (0.473) |
| Good | 0 | 0 | 0 | 0 | |
| **Burn** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 0.34 |
| Fair | 0 | 0 | 0 | 0 | (0.693) |
| Good | 0 | 0 | 0 | 0 | |
| **Adult chocking** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 0.36 |
| Fair | 0 | 0 | 0 | 0 | (0.234) |
| Good | 0 | 0 | 0 | 0 | |
| **Eye injuries** | | | | | |
| Poor | 149 | 99.3 | 148 | 98.7 | 1.8 |
| Fair | 1 | 0.7 | 2 | 1.3 | (0.473) |
| Good | 0 | 0 | 0 | 0 | |
| **Fainting** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 2.1 |
| Fair | 0 | 0 | 0 | 0 | (0.124) |
| Good | 0 | 0 | 0 | 0 | |
| **Epilepsy** | | | | | |
| Poor | 150 | 100 | 150 | 100 | 0.49 |
| Fair | 0 | 0 | 0 | 0 | (0.693) |
| Good | 0 | 0 | 0 | 0 | |
| **Wound** | | | | | |
| Poor | 147 | 98 | 148 | 98.7 | 0.23 |
| Fair | 3 | 2 | 2 | 1.7 | (0.799) |
| Good | 0 | 0 | 0 | 0 | |

$X^2$ mc: Mc-Nemar test for related groups *: Statistical significant at $p \leq 0.05$

## Discussion

The most of people consume about one-third of their time at their workplace. Hence, work is regarded as an important aspect of human life. All laborers must be trained on first aids so as to act correctly during emergencies because there is no hazards free workplaces. First aids are compound and situation tailored, consequently first aids provider require better training in order to provide good quality of care when necessary **(Abdellaet al., 2015; Khatatbeh, 2016).**

Nonetheless, it was evidenced that most workers don't have enough knowledge about first aids and correct practices which raises the need for training in this field **(Stanhope M et al, 2018) .** So, this study was conducted to

evaluate the effect of first aids program on workers′ knowledge and practices in kom hamada spinning and weaving factory.

The present study, revealed that the age of the studied sample ranged from 27-53 years with a mean of 45.7 ±5.5 among the study group ,whereas among the control group 46.7 ±6.5. Less than half of the study group had secondary education compared to slightly more than half of the control group. The vast majority of both groups had not enough income to meet

the demands of their lives. This is in the same line with the results of the study conducted by **Tetemke D et al 2014.**

The current findings illustrated that less than half of the study group and the control one respectively had experience of 15 years to less than 20 years old . Pertaining to daily working hours, the present study revealed that the vast majority of the study group were working less than 8 hours per day compared to more than three quarters of the control one. These findings were comparable with the study conducted by **Ibrahim A et al (2017).**

Training of workers on first aids provision is very essential to ensure occupational safety in various work environments **(Robert J , 2012)**.The current study illustrated that all the studied sample did not attend any training programs about first aid **(Robert J , 2012)**. This might be due inconsistent availability and expensive fees of theses training programs. These findings shed the light on the necessity of providing cheaper and widely available training programs for all workers. On the contrary, **Midani O et al (2019)** found that around one third of the studied sample received first aid training programs. This discrepancy might be attributed to variations in socio-economic status of the studied sample.

Work-related injury is an incident resulting from an occupational accident that is frequently accompanied by body damage, such as cuts, fractures, sprains, or amputation of limbs **(ILO 2012).** Global occupational injuries are becoming serious public health problems **(Hamalainen P et al 2009)** .According to universal estimation of occupational injuries (2014) worldwide there was 313 million work related injuries **(Nenonen N et al, 2014)**.

The current study showed that the majority of the study group and the control one had experienced injuries in the workplace. This may be due to unavailability of personal protective equipment in their workplace and lack of training programs about occupational safety. Otherwise, the current study is contradicted with the study done by **(Damtie D et al 2020)** who found that more than one third of the studied sample had occupational injuries. This disparity in the other study may be due to availability and utilization of personal protective equipment by the workers.

Personal protective devices utilization is one of the essential measures to safeguard workers from various occupational hazards, particularly in low income countries where applying principles of occupational health is considered a challenge (**Malik N, 2014; Kamal A, 2017)**.there are several factors influencing the usage of personal protective equipment such as workers socio-demographic traits, behavior of laborers and workplace factors. The textile workers need different personal protective equipment at various working departments. For instance, they require gloves, mask, earplugs, and respirator at spinning department **(Jaiswal A, 2012)**.

The current findings revealed that personal protective equipment were not available in the factory. This might be attributed to scarcity of financial resources and lack of awareness of authorized persons about the necessity of personal protective equipment utilization. Otherwise, the current study is contradicted with the study conducted by **Zegeorgous KG (2020)** who found that more than half of the studied sample were utilizing personal protective equipment. This discrepancy may be attributed to differences in financial resources and work- related safety culture between both countries.

Practical training component is very necessary to help workers to be skillful in first aids measures and hence to save lives by recognizing life-threatening emergencies during emergency situations at any time **(Tannvik T,2012)**.The current study shows that the vast majority of the studied sample had poor knowledge and practices about first aids before the educational intervention implementation. This might be due to lack of periodic training programs about first aids offered to the workers. Besides, decline in preventive approaches carried out by factory supervisors which may cause obvious first aids illiteracy before the program implementation.

The current findings illustrated that the first aids program resulted in tremendous change in the workers knowledge and practices concerning first aids. This drastic change may be due to the effect of tailored program that

involved all knowledge and skills needed by the workers. This improvement in the workers knowledge and practices enormously support the hypotheses that "Textile workers who engage in first aids program demonstrate more significant level of knowledge and practices than workers who do not. Although there were no similar studies for comparison. These findings suggest that first aids training programs should be disseminated to all industrial workers everywhere.

## Conclusion

The present study concluded that the first aids program was effective in improving the textile workers knowledge and practices concerning first aids.

## Recommendations

- First aids training program should be one of the mandatory pre-placement training programs for workers in order to save life of victims in case of emergency situations.
- Provision of Personal protective equipment to all workers.
- Provision of fully equipped first aids kits in all workplaces.
- Replication of the same study in different settings is highly recommended
- First aids guidelines should be available to all workers in order to decrease the early morbidity and mortality of accidents and emergencies.

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