



Research Article

Assessment of Factories on Adherence to COVID-19 Standard Operating Procedures: A Case Study of Wakiso, Mukono, Buikwe, and Jinja Districts, Uganda

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Background. Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Uganda confirmed the first case of COVID-19 on 21st March, 2020, which led to the first total lockdown in the country. During the lockdown, some factories remained operational; hence, there is a need for a study aimed at assessing the level of adherence to COVID-19 standard operating procedures (SOPs) in factories as a mitigator for the pandemic. **Methods.** A cross-sectional study to assess compliance of factories to COVID-19 SOPs was conducted in Wakiso, Mukono, Buikwe, and Jinja districts during the month of September, 2021. This involved visitation of factories and collection of data using the KoboCollect tool by interviewing general managers as well as human resource managers of the factories. A total of 39 factories were included in the study and were categorized into four major groups; food and beverages (15), plastics (5), construction (8), and others (11). Data analysis was done using STATA version 14.2. **Results.** Overall adherence to COVID-19 SOPs by the factories was 64.1% (95% CI = 49.1–79.1). Communication and training of employees (79.5%; 95% CI = 66.8–92.2), wearing personal protective equipment (PPE), and respiratory protection (79.5%; 95% CI = 66.8–92.2) as well as enhanced cleaning and disinfection of surfaces (74.4%; 95% CI = 60.6–88.1) were the most implemented SOPs in the factories. Implementation of the SOPs was the highest in Mukono district (88.9%; 95% CI = 68.4–100) and the least in Wakiso district (40.0%; 95% CI = 9.6–70.4). The COVID-19 SOPs were followed mostly in construction material factories (87.5%; 95% CI = 64.6–100) and least in food and beverage factories (40%; 95% CI = 15.2–64.8). There was no significant difference in the adherence of COVID-19 SOPs among the districts ($X^2 = 5.02$ and $P = 0.17$) and factories ($X^2 = 7.04$ and $P = 0.07$). Although good overall adherence to SOPs noted was not dependent on location and type of factory, adherence to some SOPs such as exposure control plan, presence of signages on COVID-19, maintenance of social distance, and implementation of a health control plan varied with location of the district. Likewise, exposure control plan, signages on COVID-19, and maintenance of social distance varied significantly with the type of factory. **Conclusion.** This study revealed moderately good overall adherence to COVID-19 SOPs by factories, with variations in the level of implementation of individual SOPs being observed.

1. Background

Coronavirus disease (COVID-19) is caused by the SARS-CoV-2 virus, which is characterized with a wide range of symptoms such as sore throat, fevers, headaches, congestion, or runny nose among others and it affects all age groups. It is transmitted when people inhale air with contaminated

droplets and through contact with contaminated surfaces [1].

Globally, the cumulative number of cases was 219,000,000 million cases, including 4,550,000 million deaths as of 16th September 2021 [1]. Uganda confirmed the first case of COVID-19 on 21st March, 2020 [2] leading to the first total lockdown in the country. As of 16th September 2021, a total of

122,000 cases and 3,103 deaths had been reported across all districts in the country [3]. Since the last Presidential address on COVID-19 on 29th May 2021, the COVID-19 situation drastically changed. On 4th June 2021, the country registered the highest number of cases in a single day, 1,259 cases out of 7,424 tests done (17% positivity rate), reflecting an upsurge in case patients since the end of March 2021, following a 3-month period (January, February, and March 2021) of controlling the epidemic [2, 4]. Uganda registered an exponential increase in the number of confirmed cases that cut across all the sectors including the industrial sector.

During the first lockdown, Uganda's exports declined from US\$383.62 million in January 2020 to US\$352.91 million in February 2020 and imports declined from US\$711.99 million in January 2020 to 593.79 million in March 2020 [4, 5]. By 22nd April, 2020, 4200 factories had been closed because of the pandemic, leaving only 215 in operation on the condition that very strict SOPs would be followed [4].

Uganda Manufacturers Association was engaged by the Ministry of Health to ensure continuity of essential commodity production by factories. The meeting aimed at providing and emphasizing the Ministry's guidelines to reduce the risk of contracting and spreading the virus among the factory workers and the public [2].

Several Nonpharmaceutical Interventions (NPIs) have been reported to play a vital role in preventing as well as slowing down of communicable disease outbreaks [6, 7]. It was upon this note that a number of NPIs constituted the guidelines or SOPs set up to manage the outbreak of the novel COVID-19 pandemic globally [8]. Previous studies reported low adherence to COVID-19 SOPs of 29% and 12.3% in Uganda and Ethiopia, respectively [9, 10]. Another study conducted among supermarkets in Uganda revealed that only 16.6% of the supermarkets complied with the COVID-19 prevention and control guidelines [11].

Some studies reported frequent hand washing as the most practiced preventive measure [9, 10, 12], while others reported wearing of masks and social distancing as the key SOPs [13–15].

Factory workers spend most of their time at work, with a high tendency of interaction through sharing of work space and utilities, putting them at high risk of COVID-19 infection [4, 12]. Thus, the study aimed at determining the level of adherence and compliance of the selected factories to the recommended SOPs. These findings aimed to identify areas for improvement during planning for pandemic preparedness, readiness, and response to future outbreaks.

2. Methods

2.1. Study Design. A cross-sectional study to assess compliance of factories to COVID-19 SOPs was conducted in the districts of Wakiso, Mukono, Buikwe, and Jinja in September, 2021. These four districts host the highest number of factories in Uganda.

All operational factories in the study districts were mapped by a team (Team Leader from Ministry of Health, District Surveillance Focal Person (DSFP), AFROHUN

Fellow) with guidance from Uganda Manufactures Association (UMA), Private Sector Foundation (PSF), and the District Local Governments (Figure 1). The DSFP together with the team compiled a list of factories in each district (Wakiso district had 53 factories, Buikwe had 50 factories, Mukono had 58 factories, and Jinja had 59 factories) based on the population of workers, activities, engagement of workers, and registration status of the factory. A maximum of 10 factories were then selected by simple random sampling per district of study (Table 1).

2.2. Data Collection. Data were collected using a digitalized tool designed and tested in KoboCollect software application and based on the checklist assessing evidence of NPIs developed by the US-National Institute of Health [16].

2.3. Data Analysis. The data were exported from KoboCollect as a Microsoft Excel file and cleaned. They were then analyzed using STATA 14.2 to generate frequencies and percentages, and the Kruskal–Wallis test was conducted to determine if there was a relationship between adherence to COVID-19 SOPs and type of factories and location of districts.

3. Results

A total of 39 factories were surveyed from Buikwe [10], Jinja [10], Wakiso [10], and Mukono [9]. Factories sampled were categorized into four major groups, namely, food and beverages (15/39), plastics (5/39), construction (8/39), and others (11/39). There was no significant relationship between the district location and type of factory (X^2 , $P = 0.08$), as shown in Table 2.

The overall adherence to the SOPs was observed to be good in 64.1% (95% CI = 49.1–79.1) among the factories assessed. It was observed that the most implemented SOPs (79.5%; 95% CI = 66.8–92.2) were communication and training of employees, wearing of personal protective equipment (PPE), and respiratory protection. This was followed by enhanced cleaning and disinfection of surfaces (74.4%; 95% CI = 60.6–88.1). Ventilation (35.9%; 95% CI = 20.8–51.0), social distancing (35.9%; 95% CI = 20.8–51.0), display of COVID-19-related signages (43.6%; 95% CI = 28.0–59.1), and health control plans (38.5%; 95% CI = 23.2–53.7) were poorly implemented in the factories, respectively, as shown in Figure 2.

Out of 10 SOP attributes assessed, only exposure control plan, presence of signages on COVID-19, maintenance of social distance, and implementation of a health control plan were observed to have a significant relationship with location of district.

Implementation of an exposure health control plan was practiced the highest in factories of Mukono district 9/9 (100.0%) and least in Jinja district 1/10 (10.0%; 95% CI = 8.6–28.6) and Wakiso 1/10 (10.0%; 95% CI = 8.6–28.6). Maintenance of social distance was followed the most in Jinja district 8/10 (80.0%; 95% CI = 55.2–100) and Mukono district 6/9 (66.7%; 95% CI = 29.6–90.4) factories and lowest

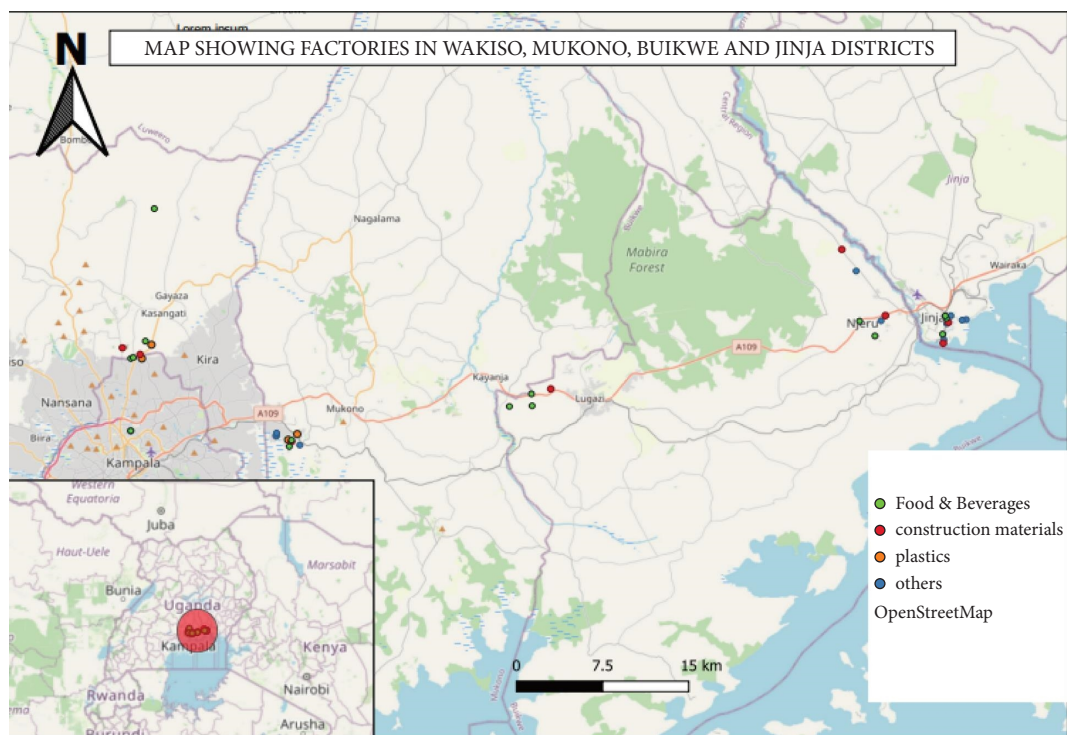


FIGURE 1: A map showing the distribution of factories in the four districts.

TABLE 1: List of factories.

| Location | Number | Factory | Factory type |
|----------|--------|------------------------------------|--|
| Buikwe | 1 | Sezibwa Sugar Mill | Sugar manufacturing |
| | 2 | Kampala Salt Uganda Ltd | Salt production |
| | 3 | Yogi Steel Ltd | Steel manufacturing |
| | 4 | Modern Distillers Ltd | Beverage |
| | 5 | Gold Star Battery Uganda Limited | Solar battery manufacturing |
| | 6 | Bavima Steel Ltd | Steel manufacturing |
| | 7 | Leeko Uganda Limited | Soap, toothpaste, and Vaseline manufacturing |
| | 8 | Kayisylvan Nutritional Services | Beverage |
| | 9 | Kasaku Tea Estate | Tea factory |
| | 10 | Tembo steel Factory | Steel manufacturing |
| Wakiso | 11 | Cementers | Construction materials |
| | 12 | MEC Plastics | Plastics |
| | 13 | Parambot Distilleries | Beverage |
| | 14 | Excel Industries | Plastics |
| | 15 | Rohobuild | Construction materials |
| | 16 | Agri-exim Industries | Food processing |
| | 17 | Ishaka Quality Commodities Limited | Food processing |
| | 18 | Atis Biscuits (Baraji East Africa) | Food processing |
| | 19 | Chief Distilleries | Beverage |
| | 20 | Kiri Bottling Company | Food processing |

TABLE 1: Continued.

| Location | Number | Factory | Factory type |
|----------|--------|---|---|
| Jinja | 21 | Ntake Bakery co. Limited | Food processing |
| | 22 | Najeru Packaging Industries limited | Fabrics/nonplastic packaging |
| | 23 | Makepasi Match limited | Wax matches |
| | 24 | Keshwala Industries Group | Beverage |
| | 25 | KABANDA and SANYU Grain Millers Group | Milling |
| | 26 | HEEK International Limited | Construction materials |
| | 27 | Akshar Agro Industries Limited | Agriengineering |
| | 28 | Elizabeth Queen Shoe Investment Limited | Foot wearing/shoes |
| | 29 | GEBAL Mineral Limited | Mining |
| | 30 | Nile Plywood Industries Limited | Timber products |
| Mukono | 31 | Good Brotherhood ICD | Ware house and shipping company |
| | 32 | Huaye | Goods transportation company |
| | 33 | Leaf tobacco and other commodities | Secondary production of cigarettes |
| | 34 | Hermian International Limited | Packaging of fruits (mangoes/blackjack) |
| | 35 | Huasheng International Limited | Production of plumbing materials |
| | 36 | Yuti Breweries | Beverage |
| | 37 | Marriat Limited | Plastic recycling company |
| | 38 | Medisell Limited | Medical and laboratory materials |
| | 39 | Mukwano Group Limited | Plastics production |

TABLE 2: Demographics of the factories assessed.

| District location | Type of factory | | | | Kruskal-Wallis X^2 | P value |
|-------------------|-----------------------------|-----------------------|-------------------|-----------------|----------------------|---------|
| | Food and beverages, n (%) | Construction, n (%) | Plastics, n (%) | Others, n (%) | | |
| Buikwe | 4 (40.0) | 4 (40.0) | 0 (0.0) | 2 (20.0) | 0.82 | 0.08 |
| Jinja | 3 (30.0) | 2 (20.0) | 0 (0.0) | 5 (50.0) | | |
| Mukono | 2 (22.2) | 0 (0.0) | 3 (33.3) | 4 (44.4) | | |
| Wakiso | 6 (60.0) | 2 (20.0) | 2 (20.0) | 0 (0.0) | | |
| Total | 15 (38.5) | 8 (20.5) | 5 (12.8) | 11 (28.2) | | |

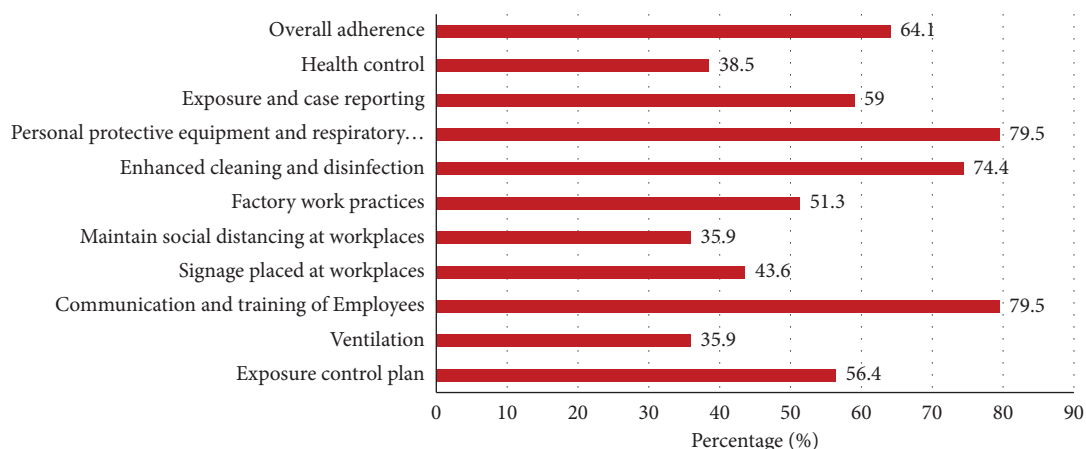


FIGURE 2: Frequency of factories adherence to COVID-19 SOPs.

in both Buikwe (0.0%) and Wakiso (0.0%). Factories in Buikwe district highly displayed COVID-19-related signages at workplaces 7/10 (70.0%; 95% CI = 41.6–98.4) unlike in Mukono district 1/9 (11.1%; 95% CI = 9.4–31.6). All factories in Mukono district had health control measures in place unlike in Jinja and Wakiso districts where only one factory had these measures (10%; 95% CI = 8.6–28.6) (Table 3). Good overall adherence to SOPs was observed to be the highest in Mukono district (88.9%; 95% CI = 68.4–100), followed by Buikwe (70.0%; 95% CI = 41.6–98.4) and Jinja

(60%; 95% CI = 29.6–90.4) and least in Wakiso district (40.0%; 95% CI = 9.6–70.4) as shown in Table 3.

Only maintenance of social distance ($X^2 = 11.24$, $P = 0.03$) as well as exposure and case reporting ($X^2 = 11.24$, $P = 0.01$) were the SOP attributes observed to have a significant relationship with the type of factory assessed. Social distancing was well maintained in other types of industries (72.7%; 95% CI = 46.4–99.0) and poorly observed in construction and plastics as well as food and beverages factories. Exposure and case reporting was implemented highly in

TABLE 3: Cross-tabulation of adherence to COVID-19 SOP attributes in factories with district of location.

| Variable | Category | Buikwe N (%) | Jinja N (%) | Mukono N (%) | Wakiso N (%) | Kruskal-Wallis X^2 | P value |
|--|----------|--------------|-------------|--------------|--------------|----------------------|----------------|
| Exposure control plan | No | 4 (40.0) | 3 (30.0) | 2 (22.2) | 8 (80.0) | 7.66 | 0.05 |
| | Yes | 6 (60.0) | 7 (70.0) | 7 (77.8) | 2 (20.0) | | |
| Ventilation | No | 5 (50.0) | 6 (60.0) | 8 (88.9) | 6 (60.0) | 3.33 | 0.34 |
| | Yes | 5 (50.0) | 4 (40.0) | 1 (11.1) | 4 (40.0) | | |
| Communication and training of employees | No | 2 (20.0) | 4 (40.0) | 0 (0.0) | 2 (20.0) | 4.53 | 0.21 |
| | Yes | 8 (80.0) | 6 (60.0) | 9 (100) | 8 (80.0) | | |
| Signage placed at workplaces | No | 3 (30.0) | 4 (40.0) | 8 (88.9) | 7 (70.0) | 8.32 | 0.04 |
| | Yes | 7 (70.0) | 6 (60.0) | 1 (11.1) | 3 (30.0) | | |
| Maintenance of social distancing at factories | No | 10 (100) | 2 (20.0) | 3 (33.3) | 10 (100) | 22.76 | < 0.001 |
| | Yes | 0 (0.0) | 8 (80.0) | 6 (66.7) | 0 (0.0) | | |
| Factory work practices | No | 6 (60.0) | 5 (50.0) | 3 (33.3) | 5 (50.0) | 1.34 | 0.72 |
| | Yes | 4 (40.0) | 5 (50.0) | 6 (66.7) | 5 (50.0) | | |
| Enhanced cleaning and disinfection | No | 1 (10.0) | 3 (30.0) | 2 (22.2) | 4 (40.0) | 2.45 | 0.48 |
| | Yes | 9 (90.0) | 7 (70.0) | 7 (77.8) | 6 (20.7) | | |
| Personal protective equipment (PPE) and respiratory protection | No | 2 (20.0) | 4 (40.0) | 0 (0.0) | 2 (20.0) | 4.53 | 0.21 |
| | Yes | 8 (80.0) | 6 (60.0) | 9 (100) | 8 (80.0) | | |
| Exposure and case reporting | No | 3 (30.0) | 5 (50.0) | 1 (11.1) | 7 (70.0) | 7.44 | 0.06 |
| | Yes | 7 (70.0) | 5 (50.0) | 8 (88.9) | 3 (30.0) | | |
| Health control plan | No | 6 (60.0) | 9 (90.0) | 0 (0.0) | 9 (90.0) | 20.71 | < 0.001 |
| | Yes | 4 (40.0) | 1 (10.0) | 9 (100) | 1 (10.0) | | |
| Overall adherence to SOPs | Poor | 3 (30.0) | 4 (40.0) | 1 (11.1) | 6 (60.0) | 5.02 | 0.17 |
| | Good | 7 (70.0) | 6 (60.0) | 8 (88.9) | 4 (40.0) | | |

P values in bold show significant differences of variables between districts.

TABLE 4: Cross tabulation of adherence to COVID-19 SOPs attributes with type of factory.

| Variable | Category | Construction | Food and beverages | Plastics | Others | Kruskal–Wallis χ^2 | P value |
|--|----------|--------------|--------------------|----------|-----------|-------------------------|-------------|
| Exposure control plan | No | 3 (37.5) | 10 (66.7) | 1 (20.0) | 3 (27.3) | 5.55 | 0.14 |
| | Yes | 5 (62.5) | 5 (33.3) | 4 (80.0) | 8 (72.7) | | |
| Ventilation | No | 4 (50.5) | 10 (66.7) | 4 (80.0) | 7 (63.6) | 1.25 | 0.74 |
| | Yes | 4 (50.5) | 5 (33.3) | 1 (20.0) | 4 (36.4) | | |
| Communication and training of employees | No | 1 (12.5) | 5 (33.3) | 0 (0.0) | 2 (18.2) | 3.07 | 0.38 |
| | Yes | 7 (87.5) | 10 (66.7) | 5 (100) | 9 (81.8) | | |
| Signage | No | 3 (37.5) | 10 (66.7) | 4 (80.0) | 5 (45.4) | 3.38 | 0.34 |
| | Yes | 5 (62.5) | 5 (33.3) | 1 (20.0) | 6 (54.6) | | |
| Social distance | No | 6 (75.0) | 12 (80.0) | 4 (80.0) | 3 (27.3) | 8.86 | 0.03 |
| | Yes | 2 (25.0) | 3 (20.0) | 1 (20.0) | 8 (72.7) | | |
| Factory work practices | No | 3 (37.5) | 10 (66.7) | 3 (60.0) | 3 (27.3) | 4.50 | 0.21 |
| | Yes | 5 (37.5) | 5 (33.3) | 2 (40.0) | 8 (72.7) | | |
| Enhanced cleaning and disinfection | No | 2 (25.0) | 5 (33.3) | 2 (40.0) | 1 (9.1) | 2.52 | 0.47 |
| | Yes | 6 (75.0) | 10 (63.7) | 3 (60.0) | 10 (90.9) | | |
| Personal protective equipment (PPE) and respiratory protection | No | 1 (12.5) | 5 (33.3) | 0 (0.0) | 2 (18.2) | 3.07 | 0.38 |
| | Yes | 7 (87.5) | 10 (66.7) | 5 (100) | 9 (81.8) | | |
| Exposure and case reporting | No | 1 (12.5) | 11 (73.3) | 2 (40.0) | 2 (18.2) | 11.24 | 0.01 |
| | Yes | 7 (87.5) | 4 (27.7) | 3 (60.0) | 9 (81.8) | | |
| Health control | No | 5 (62.5) | 11 (73.3) | 2 (40.0) | 6 (54.6) | 2.04 | 0.56 |
| | Yes | 3 (37.5) | 4 (26.7) | 3 (60.0) | 5 (45.4) | | |
| Overall adherence | No | 1 (12.5) | 9 (60.0) | 2 (40.0) | 2 (18.2) | 7.04 | 0.07 |
| | Yes | 7 (87.5) | 6 (40.0) | 3 (60.0) | 9 (81.8) | | |

P values in bold show variables noted to vary significantly among the types of factories.

construction factories (87.5%; 95% CI = 64.6–100), followed by the category of other unspecified factories (81.8%; 95% CI = 59.0–100) and plastics (60.0%; 95% CI = 17.1–100) and least in food and beverages (26.7%; 95% CI = 4.3–49.0).

It was observed that construction material factories generally had good overall adherence to COVID-19 SOPs (87.5%; 95% CI = 64.6–100) than food and beverages (40%; 95% CI = 15.2–64.8), plastics (60%; 95% CI = 17.1–100), as well as other types of industries (81.8%; 95% CI = 59–100). The relationship of overall adherence to SOPs with type of factories was however not significant ($X^2 = 7.04$, P value = 0.071) (Table 4).

4. Discussion

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus and it was declared a pandemic by WHO in 2019 [1, 17]. No studies have been conducted in the factory settings in Uganda and hardly in the region, yet factory settings involve a high tendency of crowding which can increase the risk of exposure to COVID-19 [18].

No pharmaceutical interventions including personnel and public protective practices have been reported to play a significant role of preventing occurrence and spread of public health challenges, thereby promoting good livelihoods and minimizing the burden on the already strained healthcare systems [8, 19–21]. This study assessed the level of adherence to a number of NPIs set by the government of Uganda as SOPs to be implemented by factories as a prerogative for their opening and continued operation during the COVID-19 pandemic outbreak [4].

The level of adherence to the COVID-19 SOPs in the surveyed factories was noted to be higher compared to previous studies that investigated implementation of NPIs in public spaces [22–25]. In a 2021 study of selected super markets in Mukono and Kampala districts, only 16.6% complied with the COVID-19 guidelines [11], while in a countrywide survey conducted during the first outbreak phase in Uganda in 2020, a 29.0% level of compliance to SOPs was reported [9]. This study provided evidence of a significant improvement in the implementation of NPIs against COVID-19 which could probably be attributed to increased awareness of the public health implications of the outbreak that induced high vigilance among people with time [21, 26, 27]. The considerably high adherence to the SOPs could have resulted from active enforcement by company owners to avoid their operations being blocked by the government due to breach of Ministry of Health set guidelines for control of COVID-19 in factories [4].

In this study it was noted that communication and training of employees and wearing of personal protective equipment (PPE) and respiratory protection were the most implemented SOPs at the factories, followed by enhanced cleaning and disinfection of surfaces, exposure, and case reporting. Similar findings were obtained in a study conducted in supermarkets where 59.8% of the supermarkets regularly disinfected commonly touched surfaces, 44.5% provided their staff with job-specific training on infection prevention and control for COVID-19, and 54.4% of staff

correctly used the PPE [10, 11]. On the contrary, some studies reported use of PPEs as the least observed SOP [9]. A number of studies revealed that implementation of a combination of some or all of these NPIs played a tremendous role of slowing down the COVID-19 outbreak and helped flatten its epidemic curve [24, 28, 29]. High compliance to implementation of the NPIs was however dependent on cost implications, whereby feasibly affordable interventions such as mask wearing, hand washing, and physical distancing were more emphasized [19, 20, 26, 30]. Compliance to set SOPs was also observed to increase with people's increasing beliefs regarding perceived effectiveness and convenience of use of particular interventions at their disposal [8, 27, 31].

This study showed that factories poorly adhered to ventilation, social distancing, health control plans, and display of COVID-19-related signage. Studies in Kampala and Ethiopia recorded much lower observance of social distancing (7.0% and 27.0%, respectively) [10, 32] as compared to this study. However, there are other studies that reported higher observance of social distancing (63% and 90%, respectively) [9, 12]. Ventilation is key in reducing the concentration of COVID-19 droplets released in the air of the factory settings, while social distancing limits the likelihood of spread [7, 8]. Presence of signages on the factory premises and health control plans help in raising awareness as well enable swift and effective decision-making in COVID-19 mitigation [11, 33, 34].

Although good overall adherence to SOPs envisaged here was not dependent on location and type of factory, the study revealed that adherence to some SOPs such as exposure control plan, presence of signages on COVID-19, maintenance of social distance, and implementation of a health control plan varied with district of location. Likewise, exposure control plan, signages on COVID-19, and maintenance of social distance varied significantly with the type of factory. This could have probably been because follow-up and monitoring of this MOH directive on factories adherence to set SOPs was differently done by the task force on COVID-19 surveillance at districts. Variations noted for different types of factories could be attributed to varying space requirements and number of workers that needed to be streamlined before enforcement of these SOPs [33–36].

5. Conclusion

This study revealed moderately good overall adherence to COVID-19 SOPs by factories; however, variations in the level of implementation of individual SOPs were observed. The study recommends regular spot supervision of the factories by health authorities to strengthen enforcement of these guidelines during future pandemic outbreaks.

Abbreviations

| | |
|-----------|-------------------------------|
| WHO: | World Health Organization |
| COVID-19: | Coronavirus disease |
| SOPs: | Standard operating procedures |
| MoH: | Ministry of Health |

PPE: Personal protective equipment
 AFROHUN: Africa One Health University Network
 95% CI: 95% confidence interval.

Data Availability

All data supporting the results of this study have been submitted as a supplementary file.

Ethical Approval

This study was approved by the School of Biotechnical and Biolaboratory Science Research and Ethics Committee (reference number: SBLS-23.01/2021A). All methods were carried out in accordance with relevant guidelines and regulations.

Consent

Informed consent was obtained from all subjects before their participation in the study.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

All coauthors contributed equally to the study.

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Supplementary Materials

Demographic characteristics of study factories and their adherence to COVID-19 Standard Operating Procedures attributes. (*Supplementary Materials*)

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