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Prevention of COVID-19 in Ghana: Compliance audit of selected transportation stations in the Greater Accra region of Ghana

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24

25 **Abstract**

26 Globally, as little evidence exists on transmission patterns of COVID-19, recommendations to
27 prevent infection include appropriate and frequent handwashing plus physical and social
28 distancing. We conducted an exploratory observational study to assess compliance with these
29 recommendations in selected transportation stations in Ghana. A one-hour audit of 45 public
30 transport stations in the Greater Accra region was carried out between 27th and 29th March 2020.
31 Using an adapted World Health Organization (WHO) hand hygiene assessment scale, the
32 availability and use of handwashing facilities, social distancing, and ongoing public education on
33 COVID-19 prevention measures were assessed, weighted and scored to determine the level of
34 compliance of stations. Compliance with recommendations was categorized as “inadequate”
35 “basic”, “intermediate” and “advanced” based on the overall score. The majority (80%) of
36 stations in Accra have at least one Veronica Bucket with flowing water and soap but the number
37 of washing places at each station is not adequate. Only a small minority (18%) of stations were
38 communicating the need to wash hands frequently and appropriately, and to practice
39 social/physical distancing while at the station. In most stations (95%), hand washing practice was
40 either not observed or only infrequently. Almost all stations (93%) did not have alcohol-based
41 hand sanitizers for public use, while social distancing was rarely (only 2%) practiced. In over
42 90% of the stations, face masks were either not worn or only worn by a few passengers.
43 Compliance with COVID-19 prevention measures was inadequate in 13 stations, basic in 16
44 stations, intermediate in 7 stations, and advanced in 9 stations. Compliance with COVID-19
45 prevention measures in public transportation stations in the Greater Accra region remains a
46 challenge. Awareness creation should aim to elevate COVID-19 risk perception of transportation

47 operators and clients. Transport operators and stations need support and guidance to enforce
48 hand washing and social distancing.

49 **Keywords:** Coronavirus; COVID-19; Prevention; Hand washing; Veronica bucket; Social
50 distancing, Compliance; Transportation; Ghana.

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67 **Introduction**

68 Coronavirus disease 2019 (COVID-19) is an infectious disease caused by coronaviruses,
69 specifically, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1,2]. From the
70 time when the disease was first reported in the Wuhan Province in China in December 2019 [2],
71 it has affected more than three million people globally, with over two hundred thousand deaths in
72 212 countries and territories [3]. The World Health Organization (WHO) declared COVID-19 as
73 a pandemic on 11th March 2020 [4]. COVID-19 is a highly transmissible disease with a basic
74 reproductive number estimated to be higher than that of Severe Acute Respiratory Syndrome
75 (SARS), which only affected 26 countries and caused about 8,000 deaths in 2002 [5,6].

76 COVID-19 is transmitted from person to person through small droplets from the nose or mouth,
77 which are expelled when a person with COVID-19 coughs, sneezes, or speaks and also via
78 contact with fomites [2,7]. The virus has been shown to survive outside a host for durations that
79 depend on the nature of the surface. It can survive in the air for up to 3 hours, on copper surfaces
80 for up to 4 hours, on cardboard for up to 24 hours, and plastic and stainless steel, for up to 72
81 hours [8]. Common symptoms of COVID-19 include fever, cough, colds, headaches, and
82 difficulty in breathing. Available evidence suggests that the pathogenicity of SARS-COV2
83 depends on host factors such as age and other comorbidities[9–12]. There is, currently, no
84 approved treatment for COVID-19. Neither is there any vaccine for prevention in vulnerable
85 populations [2].

86 The first two cases of COVID-19 in Ghana were identified on the 12th of March 2020 [13]. By
87 April 19th, more than 1,000 confirmed cases of COVID-19 and nine deaths had been reported.

88 To reduce person-to-person transmission, the Government of Ghana adopted and promoted the
89 WHO's recommendations[14], which include avoiding or limiting physical contact (including
90 handshake and other forms of usual contact), regular handwashing with soap under running
91 water, rubbing of hands with alcohol-based sanitizers with 70% alcohol strength, and
92 reducing/limiting large gatherings among the general populace. Coughing into the elbow or
93 tissue and disposing it immediately into a bin have also been recommended. Preventive
94 behavioral change messages have been developed and are being disseminated through various
95 media (radio, television, social media, and print media), nation-wide.

96 Emphasis has been placed on ensuring adequate handwashing and social distancing in all public
97 places, including markets and transport terminals. This was partly because the majority of urban-
98 dwelling Ghanaians rely on open markets for groceries and informal public transportation for
99 daily commuting. Public transportation stations in many parts of the Greater Accra Region
100 (GAR) including Accra and Tema are usually not spacious and are characterized by high
101 vehicular and human density, especially during rush- hours. Also, they are mostly owned and
102 managed by private individuals, resulting in little or no risk management by city authorities.

103 The public transport system is essentially informal and privately-managed by independent
104 operator unions, and designed to convey intra-city commuters using Mini-buses and Taxis. The
105 city is also served by large capacity buses for travel between cities. Irrespective of the category
106 of transportation, passengers often need to converge at crowded stations to access transportation.
107 During rush hours (6-9am in the morning and 4-7pm in the evening), many commuters
108 congregate at stations, and often have to wait in queues to access public transportation to various
109 destinations in Accra, Tema, and other administrative capitals in the region. This arrangement
110 creates large crowded situations that limit the ability to effectively practice social distancing.

111 While onboard the vehicles, passengers usually sit or stand very close to each other, largely,
112 because of overloading. This situation further creates a fertile environment for spread of COVID-
113 19 transmission.

114 With recognition of the government's recommendations to limit the spread of COVID-19, it is
115 critical to assess public responses to these preventive measures. At the time of our study,
116 compliance with these preventive measures, especially in urban spaces where intense human
117 interaction takes place, had not been systematically evaluated. We, therefore, assessed ecological
118 readiness and compliance to hand washing, and social and physical distancing recommendations
119 in selected public transportation stations in the GAR. Such a study is urgently needed to provide
120 evidence to guide policy and behavior change communication aimed at reducing the spread of
121 COVID-19 in Ghana and similar settings.

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123 **Materials and methods**

124 **Design and sampling**

125 The study was a descriptive observational compliance audit of the level of preparedness and
126 compliance with hygiene and social distancing recommendations in public transport stations. Of
127 the 16 administrative units in the GAR, 11 were included in the study. They included two
128 metropolitan cities (Accra and Tema), seven municipal cities (Ashaiman, Kpone-Katamanso, La
129 Nkwantanang Madina, Ayawaso West, Ablekuma North, Ablekuma South, and Ga East) and
130 two districts (Ningo-Prampram, and Ga West). The GAR has a population of almost five
131 million with over 137 registered market centers and their corresponding public transportation

132 stations[15]. Observations were carried in a total of 45 commercial transport stations. These
133 stations were purposively selected based on their size and volume of daily passenger traffic.

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136 **Data collection**

137 The data collection tool was developed by adapting questions from the WHO Hand Hygiene
138 Self-Assessment Framework [16]. The revised tool had a total of 26 question items, distributed
139 across six sections. The first section assessed the communication of hand hygiene and social
140 distancing at transport stations. Four observational question items were used, with a minimum
141 score of 0 and a maximum score of 15 per question, giving a maximum possible score of 60. The
142 second section assessed the availability of handwashing facilities. Four observational question
143 items were used here, with a minimum section score of 0 and a maximum possible score of 45.
144 The third section assessed the availability of water for handwashing based on three observational
145 question items. The minimum section score was 0 and the maximum possible score was 30. The
146 fourth section assessed the availability of soap, and hand sanitizers. Two observational question
147 items were used, with a minimum section score of 0 and a maximum possible score of 20. The
148 fifth section assessed the utilization of handwashing amenities using four-question items. The
149 minimum section score was 0 and the maximum possible section score was 35. The final section
150 assessed social distancing based on nine observational question items, with a minimum section
151 score of 0 and a maximum possible score of 55.

152 The tool was pretested at one commercial transport station in Accra (Atomic Roundabout
153 Station), and revised using the findings and feedback from the pre-test. Data were collected
154 between 27th and 29th March 2020, just before an anticipated public mobility restriction

155 executive order, came into force on 30th March 2020. Four of the authors of this manuscript
156 collected the data. To ensure standardization in the data collection processes, the research team
157 visited stations at three specific time points: 8:00am-10:00am; 12; 00-2:00pm, and 3:00pm-
158 5:00pm. These periods were chosen to correspond to the peak periods in most lorry stations in
159 urban Ghana. Observation and compliance auditing lasted at least one hour at each station.
160 Compliance with COVID-19 prevention recommendations was assessed in terms of identifying
161 ongoing public education about hand washing and social distancing at lorry stations, availability
162 of handwashing facilities, water, detergents (soap and sanitizers), use of handwashing facilities,
163 and social distancing.

164 At each station, the observer walked along all lanes and observed the availability of hygiene
165 facilities, source of water (veronica bucket, running water or other means), cleanliness of the
166 water, number of handwashing facilities, and frequency of handwashing, whether clients washed
167 their hands with water alone or with water and soap, and overcrowding at the handwashing
168 points. Where notice boards were available at the vehicle station, they were checked for posters
169 with messages on COVID-19 prevention as well as proper handwashing procedures and how to
170 wear a nose mask. The research team also listened to determine whether any aidion information
171 is being aired through mobile or stationary public address systems to determine whether public
172 announcements or educational messages on COVID-19 were being disseminated at the stations.

173 We also assessed social distancing practice among drivers, load bearers, passengers, and vendors
174 at the stations. Notice boards and other spaces were checked for availability of posters promoting
175 social distancing, and any infrastructural or spatial changes including barricades and
176 systematically spaced seating arrangements aimed at ensuring social distancing while passengers
177 waited in queues to board vehicles. Passengers boarding or un-boarding vehicles were observed

178 closely to determine if there were efforts not to touch surfaces that can lead to spreading of the
179 virus e.g. car doors, seats, station chairs. Also, wearing nose masks or other similar Personal
180 Protective Equipment (PPE) was observed.

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182 **Data management and analysis**

183 Questionnaires were manually checked for completeness and entered in excel 2013, where data
184 cleaning, validation, and quality checks were done. The data were then imported into STATA
185 version 14.2 (Stata Corporation, College Station, Texas) for further management and analyses.
186 Internal consistency checks were first conducted to ensure the validity and completeness of the
187 data before analysis. Descriptive statistics were used to summarize the availability of hygiene
188 facilities, water, detergents, and use of the available handwashing facilities and observation of
189 social distancing. To further understand the level of preparedness and compliance with different
190 aspects of recommended COVID-19 prevention measures at the lorry stations, we calculated the
191 overall total score and total section score for each of the six different components/sections of our
192 assessment. The overall potential total score (240) was converted into quantiles of four (4), with
193 1 (one) representing the lowest or first quantile and 4 (four) representing the highest or the fourth
194 quantile.

195 Compliance was deemed ‘Inadequate’ ‘Basic’, ‘Intermediate’ or ‘Advanced’ if the overall total
196 score fell within the 1st, 2nd, 3rd, or 4th quantile respectively. Proportions were then used to
197 describe compliance of stations.

198 **Results**

199 **Characteristics of lorry stations assessed**

200 A total of 45 transportation stations were assessed. Table 1 shows the characteristics of these
201 stations and their location. Nearly half of the stations (47%) were mini-bus stations. The Accra
202 Metropolitan Assembly had the highest number of lorry stations included among those
203 observed(22.2%).

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205 **Table 1:** Characteristics of lorry stations (n=45)

Characteristics	Frequency	Percent
Station Type		
Taxi	17	37.7
Mini buses	21	46.7
Long buses	7	15.6
District/Municipality		
Accra Metropolitan Assembly	10	22.2
Ashiamma Municipal	4	8.9
Ayawaso West Municipal	3	6.7
Ablekuma North Municipal	1	2.2
Ablekuma South Municipal	1	2.2
Ga West District (Amasaman)	5	11.1
Ga East Municipal	8	17.8
KponeKatamanso District	3	6.7
La NkwantanangMadina Municipal	2	4.4
Ningo-Prapram District	5	11.1
Tema Metropolis	3	6.7
Total	45	100.0

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207 **Communication on observing personal hygiene**

208 Table 2 shows that most of the stations (82%) had not provided any printed communication, (ie
209 notices/posters) with information on appropriate hand hygiene practice. Although most stations
210 use audio systems to manage their operations, audio announcements about handwashing/personal
211 hygiene were made in only one (2.5%) station (Tudu Inter-city) during the observation period.

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216 **Table 2:** Hand hygiene communication at selected transport stations in the Greater Accra Region
217 (n=45)

Observation item	Frequency	Percent
Posters with information on hand hygiene		
Not displayed at all	37	82.2
Displayed in some areas	6	13.3
Displayed in most areas	2	4.4
Posters explaining correct hand washing techniques		
Not displayed at all	41	91.1
Displayed in some areas	3	6.7
Displayed in most areas	1	2.2
Other hygiene reminders (e.g. coughing or sneezing into tissue paper/elbow)		
Not displayed at all	38	84.4
Displayed in some areas	4	8.9
Displayed in most areas	3	6.7
Audio announcements about handwashing /personal hygiene		
No announcement at all	44	97.8
Announcement made only once	0	0.0
Announcement made severally	1	2.2
Total	45	100.00

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219 **Availability of hand hygiene amenities at lorry stations**
220 Table 3 shows data on the availability of hand hygiene facilities at the 45 public transportation
221 stations that were studied. Most of the stations (84%) had installed a handwashing facility at the
222 time of observation. Among the 38 stations that had installed a handwashing facility, the
223 majority (53%, n=20) had only one spot for hand washing. Most of the installed handwashing
224 facilities (90%, n=34) were Veronica Buckets with receptacles for collecting wastewater.

225 Running water and soap (solid/liquid) were available in many of the stations with installed
 226 handwashing facilities (93% and 90%, respectively).

227 **Table 3:** Availability of hand hygiene amenities at transport stations in the Greater Accra Region

Observation item	Frequency	Percent
At least one installed handwashing facility (n=45)	38	84.4
Number of places for handwashing (n=38)		
Only one for the entire station	20	52.6
More than one for the entire station	18	47.4
Nature of handwashing place (n=38)		
Ceramic Sink with a tap	1	2.6
Veronica bucket with receptacle only	34	89.5
Sink and Veronica bucket at the same station	2	5.3
Others ¹	1	2.6
Hand washing facility is accessible to all at lorry station (n=38)	37	88.1
Running water available for handwashing place (n=38)	35	92.7
Available water is visibly clean (n=35)	35	100.0
Soap(solid/liquid) is available for handwashing (n=38)	34	90.0
Availability of alcohol-based hand sanitizer (s) (n=44)		
None	41	93.1
Available at one location in the station	2	4.6
Available at more than one location in the station	1	2.3

¹(Polytank/ Large rubber gallons with water)

228

229 **Utilization of handwashing facilities and sanitizers**

230 As shown in Table 4, in the 38 stations where handwashing facilities were available, there was
 231 no observation of the facilities being used in 5% of the stations (n=2). In the stations where they
 232 were used at least once, almost all the facilities were used rarely 87% (n=34). Only in 5% (n=2)
 233 of the stations were the handwashing facilities used frequently. Soap was available in 34 stations
 234 but they were used in only 87% (n=30) of the stations observed. Use of alcohol-based hand
 235 sanitizer when boarding/un-boarding vehicles was observed at only three stations (7%).

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240 Table 4: Utilisation of handwashing facilities at lorry stations in the Greater Accra Region

Observation item	Frequency	Percent
Use of handwashing facilities (n=38)		
Not used	2	5.3
Infrequently used	34	87.4
Frequently used	2	5.3
Used soap when washing hands (n = 36)	30	83.3
Use of alcohol-based hand sanitizer when boarding/un-boarding buses/cars (n=44)	3	6.8

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242 Social distancing at transportation stations

243 As indicated in Table 5, two stations (5%) provided communication with messages promoting
 244 social distancing. Only one station (State Transport Corporation, Accra) had infrastructural re-
 245 arrangements to enable social distancing. It was only in two stations that we observed passengers
 246 actively exercising physical distancing from each other at the station. In the majority of stations
 247 (63%, n=27), only a few passengers were observed wearing personal protective equipment. We
 248 observed the use of handkerchiefs, headgears, and personal clothing being used as face masks.

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250 Table 5: Social distancing at lorry stations in the Greater Accra region of Ghana.

Observation item	Frequency	Percent
Visible/recognizable communication/messages on social distancing at station (e.g. poster/audio message) (n=44)	2	4.6
Infrastructural or spatial changes to ensure social distancing at the station (e.g. barricades for how to stand in queues) (n=45)	1	2.2
Arrangements by lorry station drivers/mates/leaders to promote social distancing (e.g. enforcing appropriate queuing, boarding or seating arrangements) (n=45)	1	2.2
Passengers maintaining social distance from other passengers	1	2.3

within lorry station (e.g. deliberate individual attempts to maintain a reasonable distance from other people) (n=43)		
Other persons in lorry station (including vendors, load bearers) observing social distance when interacting with passengers(n=44)	3	93.2
Wearing of protective clothing/equipment (PPEs) within lorry station (e.g. nose mask or other similar PPEs)(n=43)		
Not worn at all	15	34.9
Worn by a few	27	62.8
Worn by many	1	2.3
Passengers making effort not to touch surfaces (e.g. car doors, seats, station chairs) (n=43)	1	2.3
Passengers were seen making an effort to keep a social distance from vendors in the station (n=42)	2	4.8

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253 **Overall compliance of lorry stations to COVID-19 preventive** 254 **measures**

255 Fig. 1 shows that the top 10 performing public transportation stations based on the overall scores
256 for handwashing and social distancing recommendations performance were Ashaiman-Main
257 Station, Festus-Station, Great Imperial, Madina Zongo Junction Lorry Station, Madina Old Road,
258 STC Accra, Tudu-Inter-City, Tudu-Main, and VIP - Circle. The worst complaint stations were
259 Prampram Main Station, Abokobi Lorry Station, Abokobi Taxi Station, Amasaman Main Station
260 Taxi, Ayalolo Terminal, Community 11 and 12, Community 5 and 6, Dawhenya Taxi Station,
261 Dome Trotro Crossing, Legon Taxi Station, Legon Trotro Station, Market Square, and Prampram
262 Last Stop.

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265 **Fig 1: Compliance of transport stations distributed by quantiles (n=45)**

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270 In terms of the total thematic compliance score for all the 45 stations, Table 6 shows that
271 majority (82%) of the stations were classified as belonging to the first quantile regarding the
272 personal hygiene communication. Eight stations(18%) were classified as belonging to the fourth
273 quantile for this theme. Regarding availability of hygiene facilities, 64% (29), 31% (14), and
274 4%(2) were classified in the first, third, and fourth quantiles respectively. Almost all (96%) of
275 stations belonged to the first quantile group with only 2 stations (4%) belonging to the fourth
276 quantile group for the availability of detergents at the stations. Regarding hand washing facilities
277 and hand sanitizer, 29% (13), 67% (30), and 4% (2) of the stations were identified with the first,
278 second, and fourth quantiles respectively. Many (56%) of the stations were classified as
279 belonging to the second quantile while 33% (25) were classified as belonging to the first quantile
280 for social distancing. Also, 11% (5) were classified as belonging to the fourth quantile for social
281 distancing.

282 For the overall compliance score, 29%(13), 36%(16), 16%(7), and 20%(9) of the stations were
283 classified as belonging to first, second, third, and fourth quantiles respectively (Table 6).
284 Compliance with COVID-19 prevention measures was classified as inadequate in 13 stations,
285 basic in 16 stations, intermediate in 7 stations, and advanced in 9 stations.

286 Table 6: Sectional and overall compliance of transport stations distributed by quantiles (n=45)

Categories	Frequency	Percent
<i>Personal hygiene education/announcement</i>		
Inadequate hygiene communication	37	82.2
Advanced hygiene communication	8	17.9
<i>Availability of hygiene facilities</i>		
Inadequate hygiene facilities	29	64.4
Intermediate hygiene facilities	14	31.1

Advanced hygiene facilities	2	4.4
Availability of detergents		
Inadequate detergent status	43	95.6
Advanced detergent status	14	4.4
Use of handwashing facilities & hand sanitizer		
Inadequate handwashing facilities	13	28.9
Basic handwashing facilities	30	66.7
Advanced handwashing facilities	2	4.44
Social distancing		
Inadequate social distancing	15	33.33
Basic social distancing	25	55.56
Advanced social distancing	5	11.11
Overall score		
Inadequate station performance	13	28.89
Basic station performance	16	35.56
Intermediate station performance	7	15.56
Advanced station performance	9	20.00

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288 Discussion

289 Early in the pandemic, Ghana was identified among African countries with the highest
 290 vulnerability, as well as limited capacity to respond to the COVID-19 pandemic [17,18] Public
 291 transportation is an indispensable service that must continue during a COVID-19 outbreak
 292 situation. A key outcome of the study is that majority (80%) of public transportation stations
 293 have at least one Veronica Bucket with flowing water and soap. While this effort to ensure
 294 handwashing by providing facilities is in line with recommended actions, passengers were not
 295 observed actively using these facilities, or were using them infrequently. Our data demonstrate
 296 that it is not sufficient to provide handwashing facilities. It is therefore important to generate
 297 demand as well as enforce usage of the hand washing facilities at the point of use [14]. Given the
 298 adverse consequences of uncontrolled COVID-19 spread, it may be appropriate to go beyond
 299 appealing to station users and managers to use the facilities and to use other means, necessary, to

300 enforce basic hand hygiene practices. This may involve using methods similar to the safety
301 practices utilized in the airline industry to prevent terrorism which have become routine public
302 safety standards for airline transportation, post-September 11.

303 Proper handwashing is essential to preventing COVID-19 transmission[17]. The World Health
304 Organization (WHO) has recommended that regular and thorough cleaning of hands with an
305 alcohol-based hand sanitizer or washing with soap and water kills viruses that may be on your
306 hands[14]. Unavailability of a sufficient number of handwashing locations, and infrequent
307 handwashing at public transport stations is, therefore, an important public health challenge, as it
308 could lead to the rapid spread of COVID-19. Public transport surfaces such as door handles,
309 seats, and restrainers are constantly touched by passengers and can be a source of transmission.
310 Indeed, the benefits of good practices at stations that are implementing COVID-19 prevention
311 measures could be eroded by non-compliant stations. Public transportation services need to learn
312 how to protect their passengers by employing specific actions that limit contact with surfaces that
313 can transmit COVID-19.

314 Infrequent hand washing at public lorry stations could be explained by several factors. First, it
315 could be linked to inadequate relevant public education about the importance of handwashing to
316 prevent COVID-19 infection. This is more likely, given that awareness creation about the
317 pandemic started rather late, coupled with a general low-risk perception of COVID-19
318 community spread. Second, it could be linked to the simple but also cultural fact that people may
319 not be used to washing their hands routinely in public, especially at lorry at the stations. It will
320 take time for people to acquire the habit of washing hands frequently. This suggests a need for
321 continuous public education using appropriate local mediums and language to ensure that
322 COVID-19 prevention information, advice, and recommendations are easily accessible and

323 understandable to the wider Ghanaian public. Such education interventions are particularly
324 warranted given that only a small minority of stations (18%) in this study were communicating
325 the need to wash hands frequently and appropriately, and to practice social/physical distancing,
326 while at the station. Insufficient communication by transportation operations could be attributed
327 to the fact that the stations and transport operators may not aware of the role they can play in the
328 national efforts to prevent the spread of COVID-19. Further, there are also not experts with
329 capacity for responding to such a health risk in a systematic fashion. They will therefore need to
330 be supported by the city administration in this regarding.

331 This study also showed that social distancing was rarely practiced; in fact, it was observed in
332 only one station. One explanation for this could be that there is insufficient risk perception of
333 COVID-19 transmission in the general population as a whole. While low-risk perception is not
334 unusual for a novel disease like COVID-19, it is worrisome, because of the potential risk of
335 infection in such crowded spaces. The government's advice is to maintain a physical distance of
336 1 meter when interacting with others, but there was no communication and education about this
337 recommendation at the stations observed. Neither was there established, any arrangements to
338 enforce it at the stations. This observed shortfall in compliance with the social distancing at the
339 stations is another reminder of the necessity for intensified communication regarding COVID-19
340 prevention in Ghana. Presently, some markets in major cities in the country including Accra,
341 Tema, and Kumasi are being shut down because of non-compliance with the social distancing
342 protocols issued by Government, but transport stations are not receiving such attention. This is
343 an unmet need that requires training and sustained enforcement beyond the transport operators.
344 We also observed that the majority of passengers were not using any PPE. The use of face masks
345 in crowded lorry stations, where the practice of social distancing is almost non-existent is a

346 public health concern [19]. At the time of the study, the government had not mandated use of
347 face masks in public spaces. Since then, use of face mask has become mandatory in Ghana and
348 the Food and Drugs Authority (FDA) of Ghana has issued guidelines for the production of
349 appropriate cloth masks [20]. However, due to the additional cost that procuring a face mask
350 may entail, we may continue seeing handkerchiefs, headgears, and personal clothing being used
351 as face masks by a section of the population.

352 The findings of our study should be interpreted with certain limitations in mind. The study
353 captured a snapshot of prevailing levels of compliance which can vary substantially with time
354 depending on the coverage and success of interventions. Also, even though we standardized how
355 observations in the stations should be done, individual biases could have still been introduced in
356 the data collection process. Despite these limitations, we believe our findings apply to other
357 public transport stations across the country, making our research relevant for policy directions.

358

359 **Conclusion**

360 The audit of transport stations revealed that compliance with COVID-19 prevention measures in
361 public transportation stations in the Greater Accra region remains a challenge. There is currently
362 limited risk communication and practice of handwashing across almost all stations. While the
363 availability of facilities (i.e. veronica buckets, water, and detergents) was relatively better,
364 washing places were still inadequate. Social distancing and wearing of PPE's were also poorly
365 observed in almost all the stations. Based on these findings, it is recommend that awareness
366 creation should aim to elevate COVID-19 risk perception among transportation operators and
367 passengers. State and private sector support and guidance should be provided to transport

368 operators and stations to enforce handwashing, wearing of PPEs, and social distancing. Also, the
369 most compliant stations could be used as best practice models, so that lessons and practices from
370 best-performing stations could be used to improve the situation in poorly performing stations.

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381 this study to be carried out.

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447 **List of Abbreviations**

448 FDA Food and Drugs Authority

449 GAR Greater Accra Region

450 GHS Ghana Health Service

451 MOH Ministry of Health

452 PPE Personal Protective Equipment

453 WHO World Health Organization

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455 **Availability of Data and Materials**

456 The dataset obtained and/or analysed is available from the corresponding author on reasonable
457 request.

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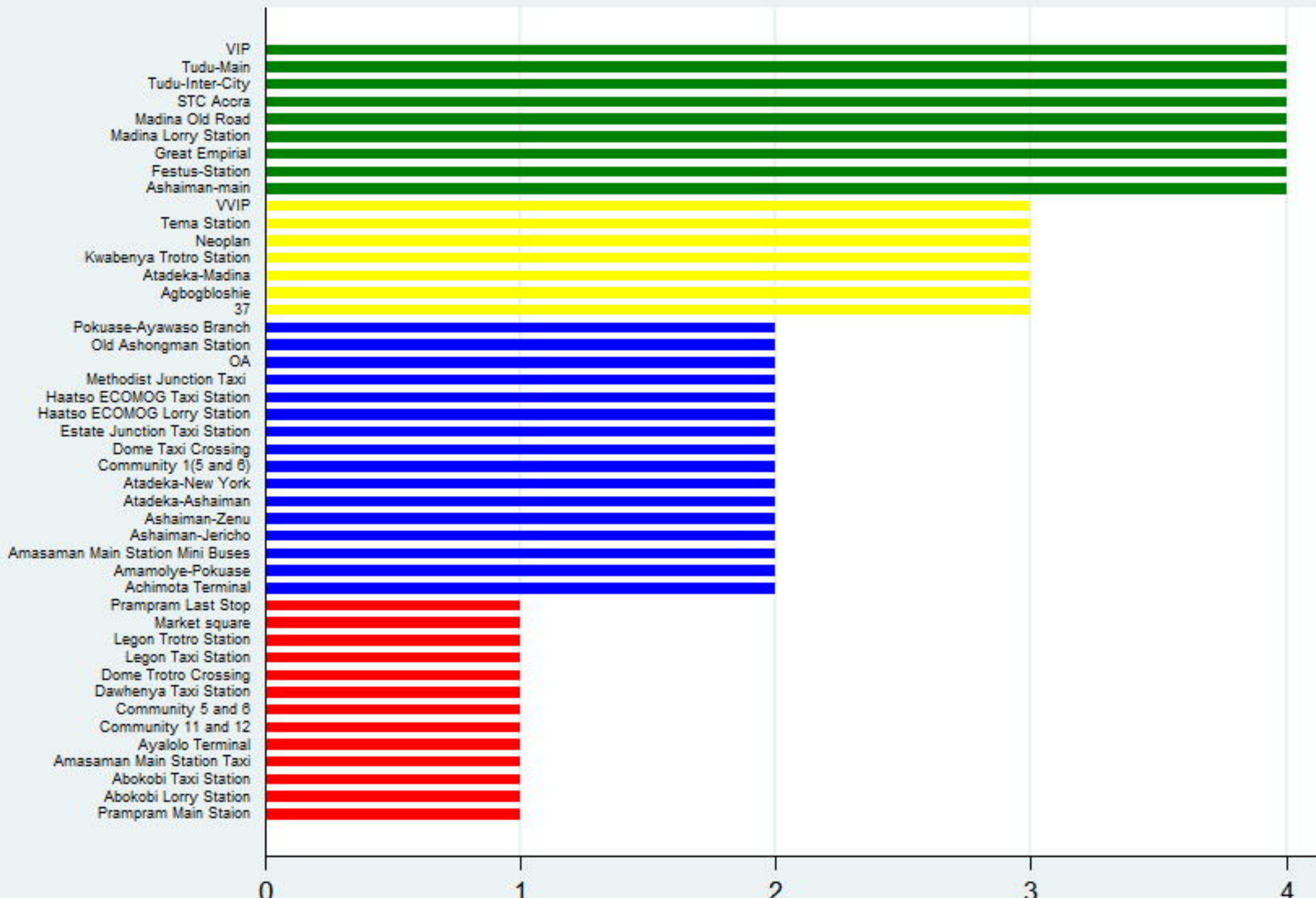
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460 **Authors' Contributions**

461 The study was conceptualized by RA, and BS. All authors contributed to research design and
462 development of study materials. HAB, MKA, JKG and BS collected all data for the study.
463 Statistical analysis and interpretation of data was led by MKA with contribution by all authors.
464 HAB led drafting of manuscript with contribution and subsequent approval by all authors.

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Four (4) quantiles of overall score