Availability of workplace policy for prevention of coronavirus disease 2019 and its relationship with personal protection behaviours: A survey of employees

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10.21203/rs.3.rs-27221/v1

**SUBJECT AREAS**  
*Occupational Medicine*

**KEYWORDS**  
*COVID-19, Prevention, Workplace policy, Personal protection behaviour, Occupation, Employee*
Abstract

**Background:** The evolving pandemic of coronavirus disease 2019 (COVID-19) has become a severe threat to public health, and the workplace presents high risks in terms of spreading the disease. Few studies have focused on the impact of workplace policy on individual behaviours. This study aimed to examine the relationship of workplace guidelines and measures with employees’ behaviours regarding COVID-19 prevention.

**Methods:** A cross-sectional survey using an online questionnaire was conducted to gather employees’ access to workplace guidelines and measures as well as their personal protection behaviours. Statistical associations between these two factors in different occupations were examined using multiple ordinal logistic regressions.

**Results:** A total of 1048 valid questionnaires across five occupational groups were analysed. Manual labourers reported lower availability of workplace guidelines and measures (76.9% vs. 89.9% for all, P = 0.003). Employees with available workplace guidelines and measures performed personal protection behaviours with higher frequency, and this association was more significant among managers/administrators and manual labourers.

**Conclusions:** Awareness about the disease and pandemic among employers and administrators should be promoted, and resources should be allocated to publish guidelines and implement measures in the workplace. Manual labourers may require specific attention regarding accessibility of relevant information, given their poorer experience of workplace policy and their work nature. Governments should guide the establishment of appropriate policies and responses at the workplace level. Further studies are needed to test the effectiveness of specific workplace policies on COVID-19 prevention.

**Background**

Coronavirus disease 2019 (COVID-19) is an illness caused by a novel pathogen that has been named “severe acute respiratory syndrome coronavirus 2” (SARS-CoV-2) [1]. As of early April 2020, over 1.4 million COVID-19 cases and 80,000 deaths have been reported in over 100 countries and regions worldwide after the first cluster of cases was reported in Wuhan, China [2]. The World Health
Organization (WHO) declared the situation as pandemic on 11 March 2020 [3]. Patients with COVID-19 can present a wide spectrum of symptoms and severity, ranging from no fever or abnormality on lung radiology results to multiple complications [1]. Human-to-human transmission has been confirmed by numerous studies [4, 5]. A cluster of cases in hospital and family settings [1] suggests that the disease can be easily spread between people who have close contact with each other, including work-related occasions. In early March 2020, the media reported an outbreak of COVID-19 in a company meeting in Massachusetts, US, with 70 out of the first 92 COVID-19 cases in Massachusetts being linked to employees of this company by 10 March 2020 [6]. This case demonstrated how severe the consequences of an outbreak in the workplace can be; therefore, more attention should be paid to the guidelines and measures provided at the workplace to prevent the disease.

To respond to the evolving pandemic, multiple types of interventions and policies have been implemented by governments in various countries and regions, including school and workplace closures, cancelling public events and public transport, public information campaigns, and restrictions and control of internal movement and international travel, as summarized by a database established by University of Oxford [7]. Among these policies, the closure of certain workplaces, compulsory and recommended work-from-home policies, and flexible work hours were announced by several governments for the purpose of social distancing. Multiple health organizations and authorities also published their own guidelines for employers and employees to prevent COVID-19 in workplace. The WHO published instructions for employers to prepare and respond to COVID-19 in their workplace [8], containing advice for maintaining workplace and personal hand hygiene, and implementing guidelines in favour of social distancing, including suggestions for holding meetings and traveling. Online resources from the WHO and the International Labor Organization have also been synthesized and provided by the European Agency for Safety and Health at Work (EU-OSHA) [9]. Most of them focus on prevention in healthcare facilities for health workers and public emergency workers, which is essential for maintaining the functioning of the health system; however, the information and resources provided for non-health and ordinary workplaces have been limited.

In early April, the EU-OSHA published guidance to assist employers providing advice to staff for
adequate prevention [10]. The Centre for Disease Control and Prevention (CDC) in the US also developed guidelines for non-health settings, helping individuals to identify risks and isolate sick employees, promoting social distancing and hand and environment hygiene, and encouraging employers to provide health education for employees [11]. Thus, COVID-19 prevention in non-health workplaces is receiving increasing attention. However, a considerable part of the contents of the aforementioned policies, guidelines, and instructions aim to promote prevention in the workplace by altering and improving the personal protection behaviours of employees, such as hand and environment hygiene and social distancing. However, these are macro-level guidelines published by governments and health authorities, which might not catch the attention of, or be easily accessed by, ordinary employed individuals.

COVID-19 prevention in the workplace is also crucial in local contexts such as Hong Kong, a city with 7.45 million residents, a labour force of 3.98 million, and 3.87 million employed persons in 2018, including employers, employees, self-employers, and unpaid family workers [12]. The consequences could be severe if precautions were not taken seriously by employers and employees. Only one previous study has been published on the degree of stress and views towards workplace supportive policies and protective equipment supply among employees [13]. To our knowledge, there has been no other study on workplace policy for the prevention of COVID-19. Based on the information provided above, evidence on the relationship between the implementation of workplace guidelines and protection behaviours at the corporate level is scanty. Thus, this study aimed to examine the impact of workplace guidelines and measures on employees’ behaviours for COVID-19 prevention and whether behavioural responses differ according to the nature of their occupation.

Methods
A cross-sectional self-administered survey of employees was conducted using an online platform from 17 to 27 February 2020 in Hong Kong. By the end of the survey, there were 93 cumulative COVID-19 cases confirmed in Hong Kong. During the survey period, daily confirmed cases were lower than 10 [14]. This study was approved by the Survey & Behavioural Research Ethics Committee of The Chinese University of Hong Kong.
**Study sample and data collection**

This study focused on the employed population of Hong Kong, which comprises 3.54 million individuals [12]. We considered eight occupation groups as defined by the Hong Kong government: 1) managers and administrators, 2) professionals, 3) associate professionals, 4) clerical support workers, 5) service and sales workers, 6) craft and related workers, 7) plant and machine operators and assemblers, and 8) elementary occupations. For this study, Hong Kong residents aged 18 years or above, employed or self-employed, working either on a full-time or part-time basis, and able to understand Chinese were eligible. An electronic device was also needed by survey participants for accessing the internet and completing the online questionnaire, which was feasible because of wide possession of web-accessible mobile devices among working-age individuals (over 99% for those aged 15-54 and around 95% for those aged 55-64) [15]. Students, housewives, and those who were retired were excluded, as they did not work in a workplace.

The questionnaire was distributed on an online platform to the target population through email and multiple social media. The questionnaire was available as a Google Form and self-administered. An information sheet about the study was included at the beginning of the survey, followed by an electronic consent form. Free and informed consent was obtained from all participants. The data collected through the questionnaire were stored in Google Drive and protected by password.

**Instruments and measures**

The questionnaire was developed based on a related study [16] and WHO guidelines for COVID-19 prevention in workplace [8]. This study focused on two major aspects as follows: 1) availability of workplace guidelines and measures for preventing COVID-19; 2) frequency in past 7 days of personal protection behaviours; eight behaviours under four categories were assessed: hand hygiene (handwashing before meals, handwashing after using the toilet, use of alcohol-based hand rub when outside), face mask (wearing face mask when outside), household hygiene (putting disinfectant into toilets, putting disinfectant into drain-pipe), social distancing (avoiding leaving home, avoiding contact with neighbours). Demographic and occupation information were also collected. A 4-point Likert scale was used by respondents to rate their frequency of personal protection behaviours,
namely “never”, “when needed”, “sometimes” and “always”. Regarding the availability of workplace guidelines and measures, respondents provided a binary response: “available” or “not available.”

**Statistical analysis**

Data processing and analyses were conducted using Stata 14.0. The demographic and occupational characteristics of survey participants were described and reported. A two-way cross tabulation analysis was performed to assess the association of occupation group with frequency of personal protective behaviours and availability of workplace guidelines, respectively, using chi-square or Fisher’s exact test to identify differences in behaviour frequency and availability of guidelines between different occupation groups. Following this, ordinal logistic regressions for different personal protection behaviours were conducted for all survey participants (i.e. one regression model for each of the eight behaviours) and for participants in different occupation groups separately (i.e. 40 regression models, for all combinations of eight behaviours and five occupations), where the frequency of each behaviour was the dependent variable, and the independent variables were availability of workplace guidelines and measures, age, gender, marital status, living arrangement, education attainment, and work status (full- or part-time), in order to determine the associations between workplace policy and personal protection behaviours and examine the differences in these associations according to occupation.

**Results**

**Demographics**

During the survey, 1196 participants completed the online questionnaire. Of these participants, 148 reported being retired or currently unemployed, or did not provide their occupation. Thus, the questionnaires from 1048 participants were deemed valid for subsequent analysis (Table 1). Among the 1048 participants, 68% were female; regarding age, 21% were 18-29 years, 28% 30-39 years, 33% 40-49 years, 16% 50-59 years, and 3% 60 years and over. Over half of the participants (53%) were married or cohabited, and only 6% were living alone. Around 75% had attained undergraduate education at university or above. The majority of participants (91%) worked on a full-time basis. With regards to occupation, 42% were professionals, 24% associated professionals, 17% managers or
administrators, and 10% clerical support workers. Our study sample comprised fewer participants from worker groups and more from professional groups than would have been representative according to Hong Kong statistics on the labour force and employed population. In the analysis, the four occupation groups of service/sales/craft workers, plant/machine operators and assemblers, elementary workers, and other were grouped as “manual labourers,” who comprised around 6% of the study sample (Table 1)

**Personal protection behaviours for prevention of COVID-19**

Compliance with the four behavioural categories comprising eight personal protective behaviours was evaluated. Regarding hand hygiene, of the 1048 survey participants, 77.1% reported always washing hands before meals, and 97.5% reported always washing hands after using the toilet, but only 56.4% always used alcohol-based hand rub when outside. Regarding face mask use, 95.4% always wore a face mask when outside. As for household hygiene behaviours, only 19.9% and 16.5% always used disinfectant to clean toilets and drain-pipes, respectively. Regarding social distancing behaviours, 51.2% reported they always avoided leaving their home and 63.2% always avoided contact with their neighbours (Table 2).

**Compliance with personal protection behaviours by socio-demographic and occupation groups**

Personal protection behaviours differed between socio-demographic subgroups in terms of age, gender, living arrangement, marital status, educational level and work status (Table 1). Younger persons tended to wash hands more frequently after using the toilet (P = 0.014) but less frequently before meals (P = 0.049). Females were more likely to always perform protection behaviours, especially using alcohol hand rub (61.9% vs. 44.6% for males), avoiding leaving home (54.8% vs.43.5% for male), and avoiding contacting neighbours (66.6% vs.56.0% for males). The cohabiting participants showed a lower frequency of several behaviours than their single, married, divorced, and widowed counterparts, namely handwashing before meals (60.9%, P = 0.011), wearing mask (87.0%, P<0.001), and avoiding contact with neighbours (43.5%, P<0.001), while those who were single, divorced, or widowed reported a lower frequency of avoiding leaving home (P = 0.008). As for living
arrangements, there was a clear pattern that participants living alone were less likely to perform protective behaviours than those living with others. In addition, there were no significant differences according to education attainment or work status for most of behaviours, except that those who finished higher secondary school reported lower frequency of using disinfectant in toilets (P= 0.034), and full-time employees were less likely to always avoid contact with neighbours (61.8% vs 76.5% for part-time, P = 0.017) (Table 2).

Personal protection behaviour patterns in different occupations were mostly alike, except for manual laborers, who reported a slightly lower frequency of such behaviours. In the two-way cross tabulation analysis of occupation and frequency of behaviours (Table 2), a significant difference between occupations was only found for putting disinfectant into toilets (P = 0.042), with 24.0% of managers and administrators and 24.2% of associate professionals always performing this behaviour, and only 15.4% of manual laborers always doing so. For handwashing, approximately 78% of the combined professionals (i.e. managers and administrators, professionals, associated professionals, and clerical workers) always washed hands before meals, and around 98% of them always washed hands after using the toilet, while manual labourers reported slightly lower frequencies for these two behaviours (69.2% and 92.3% for handwashing before meals and after using toilet, respectively), although the differences were not significant. Around 90.8% of manual labourers wore a face mask, while at least 94% individuals from the combined professionals always did so. As for social distancing, there was a lower proportion of manual labourers (53.9%) who always avoided contact with their neighbours in comparison with combined professionals (over 60%), despite the difference was not statistically significant.

**Relationship between personal protection behaviours and workplace guidelines**

It was found that 89.9% of participants reported that relevant guidelines and measures were available in their workplace, while fewer manual laborers (76.9%) reported such availability (P = 0.003). The association between personal protection behaviours and availability of workplace guidelines and measures was examined (Table 3). After adjustment for covariates, individuals with available guidelines and measures in their workplace tended to report higher frequency of handwashing before
meals (adjusted odds ratio [OR]: 4.21, 95% confidence interval [CI]: 1.62-10.95), handwashing after toilet use (adjusted OR: 7.54, 95% CI: 1.27-44.72), wearing a face mask (adjusted OR: 4.25, 95% CI: 1.02-17.76), and avoiding contact with neighbours (adjusted OR: 2.79, 95% CI: 1.15-6.76).

The significant ORs for the interaction terms of workplace policy availability and occupation presented in Table 3 suggest that the association between workplace policy availability and personal protection behaviours was different between occupational groups. The association was also examined for different occupation groups separately (Table 4). The association between workplace policy availability and personal protection behaviours was found to be significant for managers and administrators, as well as manual labourers, with adjustment for covariates, while no significant association was found for other occupations. Among managers and administrators, the availability of workplace guidelines was found to be associated with handwashing before meals (adjusted OR: 4.56, 95% CI: 1.64-12.63), wearing a face mask (adjusted OR: 9.52, 95% CI: 1.79-50.53), avoiding leaving home (adjusted OR: 2.73, 95 %CI: 1.04-7.16), and avoiding contact with neighbours (adjusted OR: 4.98, 95% CI: 1.81-13.72). Among manual laborers, the availability of guidelines was associated with handwashing before meals (adjusted OR: 4.76, 95% CI: 1.10-20.69), using alcohol-based hand rub for disinfection (adjusted OR: 6.21, 95% CI: 1.54-25.12), avoiding leaving home (adjusted OR: 9.42, 95% CI: 2.14-41.56), and avoiding contact with neighbours (adjusted OR: 4.58, 95% CI: 1.09-19.22).

Although a significant association was found, the standard errors were relatively large, and 95% CIs were also wide because of a relatively small sample size for a few behaviours and occupational groups; thus, the interpretation of point estimates of adjusted ORs should take this into consideration.

Discussion

During the current COVID-19 pandemic, few studies so far have looked at personal protection behaviours and their relationship with the availability of workplace policy related to COVID-19 prevention. In considering workplace policy availability during the COVID-19 pandemic, this study revealed that most employees performed hand hygiene and wore face masks, and over half of them showed high compliance with social distancing. Maintaining household hygiene was measured as frequency of using disinfection for toilets and drain-pipes, which comes from the experience of 2003
Severe Acute Respiratory Syndrome (SARS) outbreaks in Hong Kong, where the virus was likely to be transmitted through sanitary plumbing systems [17, 18]. However, these behaviours were found to be performed by fewer participants in this study, which might be related to the fact that no cases of COVID-19 infection have been confirmed to happen through buildings’ plumbing systems locally at the time of the present survey. Another possible reason for the low compliance with household hygiene might be related to difficulty in accessing detergents in the supermarket or online [19]. This highlights that the government plays an important role by ensuring the accessibility to necessary items during an infectious outbreak.

Our findings also indicated that individuals living alone showed a lower frequency of protection behaviours, which highlights the importance of social support from the family in promoting prevention at the individual level, as living alone might affect the accessibility to relevant information, awareness, and concern about performing such behaviours because of a lack of reminders from others at home. In light of this, governments and local communities should be able to approach these individuals to promote community-level health education and information dissemination.

This study also found that employees with different occupations showed differences in personal protection behaviours, but workplace policy availability was also a factor related to such behaviours. The employees with access to guidelines and measures for the prevention of COVID-19 showed a higher compliance with protection behaviours, especially hand hygiene, wearing a face mask, and social distancing. This suggests that publishing guidelines and implementing prevention measures in the workplace could potentially improve the personal protection behaviours of employees to enhance protection in this context.

Regarding the differences in the relationship between workplace policy availability and personal protection behaviours, only among managers and administrators as well as manual labourers, those who had access to guidelines and measures in their workplace were more likely to perform adequate protection behaviours. On one hand, managers and administrators might be the persons who have the authority to make decisions about providing such guidelines and measures in their workplace. Therefore, their own frequency of protection behaviours could reflect their knowledge, awareness,
and attitude regarding the prevention of COVID-19, and this might consequently affect the availability of guidelines and measures in their workplace. On the other hand, the lower adoption and compliance of personal protection behaviours among manual labourers relative to other occupation groups was possibly related to inadequate workplace policies in place. Most manual laborers come from lower socio-economic backgrounds and work longer hours than other occupational groups. In 2019, the median monthly salary for craft workers, machine operators, elementary workers, and sales/service workers in Hong Kong ranged from HK$12,900 to HK$21,900 (around US$1654-2808) compared to HK$28,100 (around US$3603) for managers, professionals, and associate professionals; moreover, the median number of weekly working hours was 48.0 for manual laborers, compared to 40.6 for other occupations [20]. The longer working hours and heavier working load of manual labourers could hinder their access to adequate information and awareness of the need for such protection behaviours. Additionally, it could also be difficult for these workers to obtain hand disinfectants and face masks because of shortage of supplies and inflated prices. Thus, our findings suggest that workplace guidelines and measures may serve as an important way to communicate relevant information to manual laborers and increase their awareness and attention. For some manual labourers, prevention measures in the workplace could also imply that they are able to obtain relevant protection products, such as face masks, from their employers. These guidelines and measures will not only provide support to employees in their workplace during work time, but will also increase their protection behaviours in their daily life. Other occupations such as professionals might have more knowledge and information about COVID-19 and its prevention; thus, workplace policy availability did not have a significant association with their behaviours.

Our findings suggest that it is important to promote the prevention of COVID-19 at the individual level by improving workplace guidelines and measures. Improvements are needed for employers as well as managers and administrators to enhance the availability of guidelines; moreover, there should be instructions or templates to develop guidelines and measures provided by health authorities as a reference for employers to follow and develop their own version. Adequate training for infection control can be made available to employees to improve their awareness and hygiene practice based
on experiences from outbreaks and epidemics of other diseases [16, 21]. Among the different occupations, more efforts are required to provide workplace prevention guidelines and measures for manual labourers, including service workers/sales/craft workers, plant/machine operators, and assemblers and elementary workers, as their reported availability of such guidelines was lower, and some of them, such as service/sales workers, are exposed to a higher risk than others because of having more frequent contact with other individuals. The effectiveness of specific guidelines and measures for them to improve their personal protection behaviours can be further examined in future studies.

Governments also play an important role in promoting workplace policies for COVID-19 prevention. Mainland China extended public holidays and issued a mandatory work-from-home policy for unessential positions in late January and early February 2020 [22]. The government of Japan and Singapore have also encouraged employees to take leave if they have symptoms and promoted teleworking and staggered office hours [7]. The Hong Kong government has also implemented work-from-home arrangements for government employees since February, and urged the private sector to make flexible work arrangements for employees in late March 2020 [23]. Although the effectiveness of these measures in reducing disease transmission is still unclear and needs to be further evaluated, a wider range of workplace policies is expected to be available to employees in Hong Kong. Some individuals had concerns about salary penalties for absence due to influenza or COVID-19 [13]. This kind of concern may reduce employees’ willingness to comply with suggestions such as social distancing if they experience symptoms, which would consequently expose their colleagues and general public to a higher risk. Employees were also in need of instructions on how to properly keep hygiene and wear a face mask [13]. This information could also be disseminated through workplace guidelines, which could help improve the adequacy and effectiveness of employees’ protection behaviours.

The limitations of this study should also be considering when interpreting the findings. First, the study sample comprised more professionals as well as managers and administrators, and fewer manual laborers compared with the occupational distribution of the employed population in Hong Kong; this
was one of the reasons why the analysis of association was not only applied to the entire study sample but also to different occupations separately in order to reflect the differences between occupations. Second, the number of participants in some occupational groups and with certain experience of workplace policy availability was relatively small, which led to larger standard errors of adjusted OR estimates or non-convergence of statistical models. Therefore, the estimates of the regression models were reported and interpreted along with their confidence intervals, which reflect their standard errors. In addition, the type and contents of workplace guidelines and measures were not specified in the survey; therefore, conclusions on whether a specific measure or workplace policy may be associated with personal protection behaviours need to be drawn in future studies.

Conclusion
This study provided evidence on current flaws in workplace policy availability regarding COVID-19 prevention and its potential impact on personal protection behaviours. Attention is needed from multiple parties, including employers, employees, and governments, to increase awareness about the importance of workplace guidelines and measures in the prevention of COVID-19 at individual and community levels, especially for manual labourers, given that adequate workplace policy not only could reduce infection risk at work but may also potentially promote employees’ behaviours for prevention in daily life. Workplace guidelines and measures need to be improved by employers with the aid from the government and health authorities. The workplace policy serves as a way to disseminate information for health promotion and education regarding COVID-19; therefore, more efforts and resources need to be invested in this area by public health authorities. Further studies are also needed in different regions and countries for a thorough evaluation of workplace policies.

List Of Abbreviations
CDC: Centre for Disease Control and Prevention
COVID-19: coronavirus disease 2019
EU-OSHA: European Agency for Safety and Health at Work
SARS: severe acute respiratory syndrome
SARS-CoV-2: severe acute respiratory syndrome coronavirus 2
WHO: World Health Organization

Declarations

Competing interests

The authors declared that they have no competing interests.

Acknowledgements

We thank for Mr. Jack CH Lau, Ms. Amy YK Wong and Mr. Peter SY Yau for their support in creating the on-line survey platform and monitoring the quality of data collection.

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Tables

Table 1. Socio-demographic characteristics and personal protection behaviours of survey participants

| Age group | Hand Hygiene | Face Mask | Household Hygiene | Social distancing | Total |
|-----------|--------------|-----------|--------------------|------------------|-------|
|           | "Always" hand wash before meals | "Always" use alcohol | "Always" wear mask | "Always" put disinfectant into toilets |                   |
|           | N (%)        | N (%)     | N (%)              | N (%)            | N (%) |
| 18-29     | 150 (69.1)   | 209 (96.3) | 100 (100)         | 100 (100)       | 100   |
|           | 213 (98.2)   | 38 (17.5)  | 136 (136)         | 136 (136)       | 136   |
|           | 117 (53.9)   | 32 (14.8)  | (20.7)            | (20.7)          | (20.7) |
| 30-39     | 234 (79.6)   | 281 (95.5) | 154 (154)         | 154 (154)       | 154   |
|           | 291 (99.0)   | 44 (15.7)  | 183 (183)         | 183 (183)       | 183   |
|           | 170 (57.8)   | 44 (15.7)  | 294 (294)         | 294 (294)       | 294   |
| 40-49     | 273 (79.7)   | 330 (95.7) | 183 (183)         | 183 (183)       | 183   |
|           | 337 (97.7)   | 80 (23.2)  | 345 (345)         | 345 (345)       | 345   |
|           | 206 (59.7)   | 62 (18.0)  |                   |                 |       |
| 50-59     | 126 (77.3)   | 154 (94.5) | 82 (82)           | 82 (82)         | 82    |
|           | 154 (94.5)   | 29 (17.8)  | 163 (163)         | 163 (163)       | 163   |
|           | 82 (50.3)    | 29 (17.8)  |                   |                 |       |
| 60+       | 25 (86.2)    | 26 (89.7)  | 17 (17)           | 17 (17)         | 17    |
|           | 27 (93.1)    | 6 (20.7)   | 29 (2.8)          |                 |       |
|           | 16 (55.2)    | 6 (20.7)   |                   |                 |       |
| P-value $^*$ | 0.049* | 0.014* | 0.227 | 0.471 | 0.147 | 0.353 | 0.684 | 0.279 |

| Gender | Hand Hygiene | Face Mask | Household Hygiene | Social distancing | Total |
|--------|--------------|-----------|--------------------|------------------|-------|
| Female | "Always" hand wash before meals | "Always" use alcohol | "Always" wear mask | "Always" put disinfectant into toilets |                   |
|        | N (%)        | N (%)     | N (%)              | N (%)            | N (%) |
| Female | 560 (78.7)   | 684 (96.1) | 390 (67.9)         | 390 (67.9)       | 390   |
|        | 695 (97.6)   | 149 (20.9) | 474 (66.6)         | 474 (66.6)       | 474   |
|        | 441 (61.9)   | 124 (17.4) | (67.9)            | (67.9)          | (67.9) |
| Male   | "Always" hand wash after toileting | "Always" use alcohol | "Always" wear mask | "Always" put disinfectant into toilets |                   |
|        | N (%)        | N (%)     | N (%)              | N (%)            | N (%) |
| Male   | 248 (73.8)   | 316 (94.1) | 146 (146)         | 146 (146)       | 146   |
|        | 327 (97.3)   | 60 (17.9)  | 336 (336)         | 336 (336)       | 336   |
|        | 150 (44.6)   | 49 (14.6)  |                   |                 |       |
| P-value $^*$ | 0.357 | 0.425 | 0.002* | 0.005* |

Note: $^*$ indicates statistical significance at the 0.05 level.
| Marital status          | 319  | 437  | 240  | 425  | 83   | 66   | 212  | 275  | 444  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Never married           | (71.9) | (98.4) | (54.1) | (95.7) | (18.7) | (14.9) | (47.8) | (61.9) | (42.4) |
| Married                 | 438  | 518  | 312  | 510  | 106  | 95   | 291  | 347  | 534  |
| (82.0)                  | (97.0) | (58.4) | (95.5) | (19.9) | (17.8) | (54.5) | (65.0) | (51.0) |
| Cohabiting              | 14   | 22   | 12   | 20   | 5    | 4    | 12   | 10   | 23 (2.2) |
| (60.9)                  | (95.7) | (52.2) | (87.0) | (21.7) | (17.4) | (52.2) | (43.5) |
| Divorced/separated      | 31   | 38   | 23   | 38   | 12   | 5    | 19   | 27   | 39 (3.7) |
| (79.5)                  | (97.4) | (59.0) | (97.4) | (30.8) | (12.8) | (48.7) | (69.2) |
| Windowed                | 6    | 7    | 4    | 7    | 3    | 3    | 2    | 3    | 8 (0.8) |
| (75.0)                  | (87.5) | (50.0) | (87.5) | (37.5) | (37.5) | (25.0) | (37.5) |
| **P-value**             | 0.011* | 0.113 | 0.806 | <0.00 | 0.518 | 0.592 | 0.008* | <0.00 |
| Living arrangement      |      |      |      |      |      |      |      |      |      |
| Alone                   | 49   | 63   | 33   | 60   | 11   | 9    | 32   | 41   | 68 (6.5) |
| (72.1)                  | (92.7) | (48.5) | (88.2) | (16.2) | (13.2) | (47.1) | (60.3) |
| With family             | 733  | 921  | 537  | 905  | 186  | 158  | 481  | 596  | 942  |
| (77.8)                  | (97.8) | (57.0) | (96.1) | (19.8) | (16.8) | (51.1) | (63.3) | (89.9) |
| With others             | 26   | 38   | 21   | 35   | 12   | 6    | 23   | 25   | 38 (3.6) |
| (68.4)                  | (100.0) | (55.3) | (92.1) | (31.6) | (15.8) | (60.5) | (65.8) |
| **P-value**             | 0.323 | 0.202 | 0.044* | <0.00 | 0.007* | 0.037* | 0.788 | 0.121 |
| Education attainment    |      |      |      |      |      |      |      |      |      |
| Lower                   | 4    | 8    | 5    | 9    | 3    | 3    | 4    | 6    | 10 (1.0) |
| secondary school        | (40.0) | (80.0) | (50.0) | (90.0) | (30.0) | (30.0) | (40.0) | (60.0) |
| Higher                  | 78   | 100  | 54   | 98   | 17   | 15   | 57   | 68   | 103  |
| secondary school        | (75.7) | (97.1) | (52.4) | (95.2) | (16.5) | (14.6) | (55.3) | (66.0) | (9.8) |
| Preparatory             | 119  | 144  | 88   | 143  | 28   | 21   | 75   | 87   | 148  |
| Course                  | (80.4) | (97.3) | (59.5) | (96.6) | (18.9) | (14.2) | (50.7) | (58.8) | (14.1) |
| Undergraduate or above  | 607  | 770  | 444  | 750  | 161  | 134  | 400  | 501  | 787  |
| (77.1)                  | (97.8) | (56.4) | (95.3) | (20.5) | (17.0) | (50.8) | (63.7) | (75.1) |
| **P-value**             | 0.280 | 0.084 | 0.944 | 0.563 | 0.034* | 0.538 | 0.480 | 0.816 |
| Work status             |      |      |      |      |      |      |      |      |      |
| Full-time               | 735  | 927  | 535  | 907  | 191  | 155  | 477  | 587  | 950  |
| (77.4)                  | (97.6) | (56.3) | (95.5) | (20.1) | (16.3) | (50.2) | (61.8) | (90.7) |
| Part-time               | 73   | 95   | 56   | 93   | 18   | 18   | 59   | 75   | 98 (9.4) |
| (74.5)                  | (96.9) | (57.1) | (94.9) | (14.3) | (18.4) | (60.2) | (76.5) |
| **P-value**             | 0.838 | 0.942 | 0.812 | 0.866 | 0.276 | 0.511 | 0.226 | 0.017* |
| Total                   | 880  | 1022 | 1000 | 591  | 209  | 173  | 536  | 662  | 1048 |
Table 2. Personal protection behaviour and workplace policy among people with different occupations

|                | Manager and administrative | Professional | Associate professional | Clerical support worker | Manual labourer | Total |
|----------------|----------------------------|--------------|------------------------|------------------------|-----------------|-------|
|                | N = 183 n (Col%)           | N = 440 n (Col%) | N = 256 n (Col%)     | N = 104 n (Col%)       | N = 65 n (Col%) | N = 1048 n (Col%) |

**H** Hand wash before meals

|                | Never | When needed | Sometimes | Always |
|----------------|-------|-------------|-----------|--------|
| **a** Never    | 0 (0.0) | 2 (5.2) | 0 (0.0) | 1 (1.0) | 0 (0.0) | 3 (0.3) | 0.736 |
| **n** When     | 11 (6.0) | 23 (5.2) | 9 (3.5) | 4 (3.9) | 4 (6.2) | 51 (4.9) |       |
| **d** needed   |       |            | 28 (15.3) | 18 | 16 | 186 |       |
| **y** Sometimes| 2 (1.1) | 4 (0.9) | 1 (0.4) | 1 (1.0) | 2 (3.1) | 10 (1.0) |       |
| **g** Always   | 144 (78.7) | 338 (76.8) | 200 (78.1) | 81 | 45 | 808 |       |
| **i**          | (77.9) | (69.2) | (77.1) |       |       |       |       |

**e** Hand wash after toileting

|                | Never | When needed | Sometimes | Always |
|----------------|-------|-------------|-----------|--------|
| **n** Never    | 0 (0.0) | 1 (0.2) | 0 (0.0) | 0 (0.0) | 0 (0.0) | 1 (0.1) | 0.443 |
| **e** When     | 2 (1.1) | 4 (0.9) | 1 (0.4) | 1 (1.0) | 2 (3.1) | 10 (1.0) |       |
| **d** needed   |       |            | 4 (2.2) | 3 (1.2) | 1 (1.0) | 3 (4.6) | 15 (1.4) |       |
| **y** Sometimes| 177 (96.7) | 431 (98.0) | 252 (98.4) | 102 | 60 | 1022 |       |
| **g** Always   | (98.1) | (92.3) | (97.5) |       |       |       |       |

**Use of alcohol hard rub**

|                | Never | When needed | Sometimes | Always |
|----------------|-------|-------------|-----------|--------|
| **Never**      | 6 (3.3) | 26 (5.9) | 12 (4.7) | 4 (3.9) | 5 (7.7) | 53 (5.1) | 0.812 |
| **When**       | 27 (14.8) | 57 (13.0) | 39 (15.2) | 14 | 12 | 149 |       |
| **d** needed   |       | (13.5) | (18.5) | (14.2) |       |       |       |       |
| **Sometimes**  | 41 (22.4) | 117 (26.6) | 57 (22.3) | 27 | 13 | 255 |       |
| **Always**     | 109 (59.6) | 240 (54.6) | 148 (57.8) | 59 | 35 | 591 |       |
| **F** Wear mask
|                | Never | When needed | Sometimes | Always |
|----------------|-------|-------------|-----------|--------|
| **a** Never    | 0 (0.0) | 2 (0.5) | 1 (0.4) | 1 (1.0) | 0 (0.0) | 4 (0.4) | 0.599 |
| **c** When     | 3 (1.6) | 7 (1.6) | 3 (1.2) | 0 (0.0) | 2 (3.1) | 15 (1.4) |       |
| **M** needed   |       |            | 7 (3.8) | 10 (2.3) | 7 (2.7) | 1 (1.0) | 4 (6.2) | 29 (2.8) |
|    | Always | s | Never | h | u | s | e | w | n | a | t | k | o | s | e | w | n | a | t | k | o | s | e | w | n | a | t | k | o | s | e | w | n | a | t |
|----|--------|---|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a  | Always | 173 (94.5) | 421 (95.7) | 245 (95.7) | 102 | 59 | 1000 |
| s  | (98.1) | (90.8) | (95.4) |

| H Put disinfectants into toilets |
|---------------------------------|
| o | Never | 68 (37.2) | 173 (39.3) | 96 (37.5) | 32 | 21 | 390 | 0.042* |
| u | (30.8) | (32.3) | (37.2) |
| s | When | 42 (23.0) | 117 (26.6) | 50 (19.5) | 33 | 14 | 256 |
| e | needed | (31.7) | (21.5) | (24.4) |
| h | Sometimes | 29 (15.9) | 75 (17.1) | 48 (18.8) | 21 | 20 | 193 |
| o | (20.2) | (30.8) | (18.4) |
| l | Always | 44 (24.0) | 75 (17.1) | 62 (24.2) | 18 | 10 | 209 |
| d | (17.3) | (15.4) | (19.9) |

| H Put disinfectants into drain-pipe |
|-----------------------------------|
| y | Never | 58 (31.7) | 160 (36.4) | 100 (39.1) | 37 | 20 | 375 | 0.108 |
| g | (35.6) | (30.8) | (35.8) |
| i | When | 52 (28.4) | 133 (30.2) | 60 (23.4) | 24 | 24 | 293 |
| e | needed | (23.1) | (36.9) | (28.0) |
| n | Sometimes | 38 (20.8) | 77 (17.5) | 48 (18.8) | 27 | 17 | 207 |
| e | (26.0) | (26.2) | (19.8) |
| Always | 35 (19.1) | 70 (15.9) | 48 (18.8) | 16 | 4 (6.2) | 173 |
| (15.4) | (16.5) |

| S Avoid leaving home |
|----------------------|
| o | Never | 7 (3.8) | 15 (3.4) | 9 (3.5) | 1 (1.0) | 4 (6.2) | 36 (3.4) | 0.947 |
| c | When | 30 (16.4) | 68 (15.5) | 45 (17.6) | 17 | 10 | 170 |
| i | needed | (16.4) | (15.4) | (16.2) |
| a | Sometimes | 55 (30.1) | 135 (30.7) | 70 (27.3) | 28 | 18 | 306 |
| l | (26.9) | (27.7) | (29.2) |
| D | Always | 91 (49.7) | 222 (50.5) | 132 (51.6) | 58 | 33 | 536 |
| (55.8) | (50.8) | (51.2) |

| s Avoid contacting neighbour |
|-----------------------------|
| t | Never | 11 (6.0) | 20 (4.6) | 20 (7.8) | 2 (1.9) | 3 (4.6) | 56 (5.3) | 0.377 |
| a | When | 21 (11.5) | 57 (13.0) | 29 (11.3) | 12 | 11 | 130 |
| n | needed | (11.5) | (16.9) | (12.4) |
| c | Sometimes | 35 (19.1) | 82 (18.6) | 41 (16.0) | 26 | 16 | 200 |
| i | (25.0) | (24.6) | (19.1) |
| n | Always | 116 (63.4) | 281 (63.9) | 166 (64.8) | 64 | 35 | 662 |
| (61.5) | (53.9) | (63.2) |

| Availability of workplace guidelines and measures |
|-----------------------------------------------|
| No | 22 (12.0) | 38 (8.6) | 19 (7.4) | 12 | 15 | 106 | 0.003* |
| (11.5) | (23.1) | (10.1) |
| Yes | 161 (88.0) | 402 (91.4) | 237 (92.6) | 92 | 50 | 942 |
| (88.5) | (76.9) | (89.9) |

* P < 0.05
Note: 1. Manual labourer: service/sales workers and craft workers, plant/machine operators and assemblers, elementary workers, and farm workers, animal husbandry workers and fishermen, occupations unidentifiable or inadequately described. 2. These P value came from Chi-square test or Fisher’s exact test.

Table 3. Association of personal protection behaviours with workplace policy and socio-demographic factors

|                      | Hand Hygiene | Face Mask | Household Hygiene | Social distancing |
|----------------------|--------------|-----------|-------------------|-------------------|
|                      | Hand wash before meals | Hand wash after toilet | Use alcohol hand rub | Wear mask | Put disinfectants into toilets | Put disinfectants into drain pipe | Avoid leaving home | Avoid contact neighbours |
|                      | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| Workplace guideline and measures |              |           |                   |                 |               |               |               |               |
| Not available        | Reference    | Reference | Reference         | Reference        | Reference     | Reference     | Reference     | Reference     |
| Available            | 4.21* (1.62, 10.95) | 7.54* (1.27, 44.72) | 1.53 (0.65, 3.60) | 4.25* (1.02, 17.76) | 0.61 (0.27, 1.40) | 0.58 (0.26, 1.30) | 1.73 (0.73, 4.11) | 2.79* (1.15, 6.76) |
| Occupation           |              |           |                   |                 |               |               |               |               |
| Manager and administrator | Reference | Reference | Reference         | Reference        | Reference     | Reference     | Reference     | Reference     |
| Professional         | 2.52 (0.82, 7.73) | 3.00 (0.26, 34.24) | 1.10 (0.40, 3.05) | 1.56 (0.29, 8.46) | 0.46 (0.17, 1.22) | 0.51 (0.20, 1.33) | 1.36 (0.50, 3.70) | 2.00 (0.69, 5.78) |
| Associate professional | 8.31* (1.49, 46.47) | --- (0.40, 3.05) | 1.41 (0.40, 3.05) | --- (0.24, 8.46) | 0.78 (0.24, 3.05) | 0.97 (0.30, 3.05) | 2.96 (0.85, 10.34) | 3.95* (1.05, 14.91) |
| Clerical support worker | 2.28 (0.50, 10.45) | 0.81 (0.05, 12.90) | 1.43 (0.36, 5.71) | 1.79 (0.13, 24.82) | 0.49 (0.14, 1.70) | 0.33 (0.09, 1.25) | 2.53 (0.58, 11.16) | 1.92 (0.44, 8.49) |
| Manual labourer      | 0.83 (0.22, 0.44) | 0.90 (0.10, 8.19) | 0.52 (0.13, 1.51) | 0.52 (0.08, 3.23) | 0.38 (0.07, 1.33) | 0.24 (0.07, 0.84) | 0.30 (0.08, 1.12) | 0.56 (0.16, 2.03) |

Interaction: workplace guideline x occupation

21
| Available x. | 0.35 | 0.22 | 0.67 | 0.51 | 1.83 | 1.68 | 0.75 | 0.43 |
|-------------|------|------|------|------|------|------|------|------|
| Professional| (0.10, (0.01, (0.23, (0.07, (0.65, (0.62, (0.26, (0.14, |
|             | 1.16) | 3.69) | 1.97) | 3.56) | 5.11) | 4.60) | 2.15) | 1.33) |
| Available x | 0.22* | --- | 0.56 | --- | 1.37 | 0.88 | 0.33 | 0.22* |
| Associate   | (0.02, (0.15, (0.65) | 2.09) | (0.40, (0.26, (0.09, (0.05, |
| Professional|             |       |       |       |       |       |       |       |
| Available x | 0.42* | 1.67 | 0.54 | 1.65 | 1.97 | 3.14 | 0.44 | 0.42 |
| Clerical support | (0.08, (0.05, (0.13, (0.06, (0.53, (0.77, (0.09, (0.09, |
| Workers     | 2.17) | 58.42) | 2.33) | 48.25) | 7.27) | 12.72) | 2.05) | 2.02) |
| Available x Manual labourer | 1.06 | 0.27 | 1.81 | 0.84 | 3.10 | 3.81 | 4.43* | 1.21 |
| Age group   | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| 18-29       | 1.43 | 4.29 | 1.03 | 0.93 | 1.12 | 1.05 | 1.23 | 0.97 |
|            | (0.92, (0.70, (0.71, (0.34, (0.79, (0.74, (0.85, (0.66, |
|            | 2.23) | 26.17) | 1.49) | 2.54) | 1.58) | 1.49) | 1.77) | 1.44) |
| 30-39       | 1.29 | 1.88 | 1.05 | 0.89 | 1.41 | 1.27 | 1.17 | 0.98 |
|            | (0.80, (0.41, (0.70, (0.31, (0.97, (0.88, (0.79, (0.65, |
|            | 2.08) | 8.61) | 1.56) | 2.53) | 2.04) | 1.85) | 1.73) | 1.50) |
| 40-49       | 1.17 | 0.60 | 0.70 | 0.70 | 1.23 | 1.02 | 1.06 | 0.83 |
|            | (0.67, (0.13, (0.44, (0.22, (0.79, (0.66, (0.67, (0.51, |
|            | 2.07) | 2.76) | 1.11) | 2.24) | 1.92) | 1.59) | 1.66) | 1.34) |
| 50-59       | 2.80 | 0.62 | 0.96 | 0.48 | 1.77 | 1.72 | 1.87 | 1.18 |
|            | (0.84, (0.08, (0.41, (0.09, (0.83, (0.80, (0.81, (0.49, |
|            | 9.41) | 5.04) | 2.22) | 2.44) | 3.76) | 3.70) | 4.32) | 2.85) |

* P < 0.05; The values reported in the table are adjusted odds ratios and their 95% Confidence intervals (CI)

Note: 1. Manual labourer: service/sales workers and craft workers, plant/machine operators and assemblers, elementary workers, and farm workers, animal husbandry workers and fishermen, occupations unidentifiable or inadequately described.

Table 3 (Continued). Association of personal protection behaviours with workplace policy and socio-demographic factors
| Gender | CI) | CI) | CI) | CI) | CI) | CI) | CI) | CI) |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|
| Female | Ref | 0.71* | 1.22 | 0.45* | 1.24 | 0.66 | 0.75* | 0.60* |
| Male   | Ref | 0.52 | 0.49 | 0.35 | 0.35 | 0.59 | 0.72 | 0.47 |
| Ref | 0.98 | 2.99 | 0.59 | 1.24 | 0.96 | 1.17 | 0.51 | 0.78 |
| Ref | Ref | Ref | Ref | Ref | Ref | Ref | Ref | Ref |
| Marital status | CI) | CI) | CI) | CI) | CI) | CI) | CI) | CI) |
| Never married | Ref | 1.65* | 0.38 | 1.28 | 0.93 | 0.84 | 0.91 | 1.31 |
| Ref | 1.12 | 0.10 | 0.93 | 0.41 | 0.63 | 0.69 | 0.97 | 0.87 |
| Ref | 2.44 | 1.35 | 1.74 | 2.11 | 1.13 | 1.22 | 1.77 | 1.64 |
| Ref | 0.74 | 0.09 | 0.77 | 0.32 | 0.70 | 0.81 | 0.96 | 0.45 |
| Ref | 0.27 | 0.01 | 0.30 | 0.06 | 0.30 | 0.35 | 0.38 | 0.17 |
| Ref | 2.06 | 1.04 | 1.97 | 1.72 | 1.62 | 1.90 | 2.44 | 1.17 |
| Married | Ref | 1.80 | 1.15 | 1.53 | 2.79 | 2.13 | 1.40 | 1.03 |
| Ref | 6.27* | 0.29 | 0.69 | 0.51 | 2.58 | 2.51 | 0.54 | 0.30 |
| Ref | 4.38 | 11.54 | 3.07 | 23.38 | 2.17 | 2.62 | 2.02 | 3.22 |
| Ref | 7.36 | 5.40 | 2.81 | 5.83 | 9.60 | 10.06 | 1.87 | 1.13 |
| Cohabited | Ref | 1.24 | 0.29 | 0.69 | 0.51 | 2.58 | 2.51 | 0.54 | 0.30 |
| Ref | 0.21 | 0.02 | 0.17 | 0.04 | 0.69 | 0.63 | 0.16 | 0.08 |
| Widowed | Ref | 1.29 | 6.27* | 1.46 | 3.40* | 1.20 | 2.12* | 1.72 |
| Ref | 0.70 | 1.57 | 0.87 | 1.27 | 1.36 | 1.26 | 0.62 | 0.69 |
| Ref | 2.39 | 25.00 | 2.45 | 9.09 | 3.88 | 3.56 | 1.75 | 2.08 |
| Ref | 2.06 | 1.04 | 1.97 | 2.17 | 2.58 | 2.51 | 0.54 | 0.30 |
| Ref | 0.43 | 0.85 | 4.87 | 0.36 | 0.69 | 0.63 | 0.16 | 0.08 |
| Living arrangement | CI) | CI) | CI) | CI) | CI) | CI) | CI) | CI) |
| Alone | Ref | 1.29 | 6.27* | 1.46 | 3.40* | 1.20 | 2.12* | 1.72 |
| Ref | 0.70 | 1.57 | 0.87 | 1.27 | 1.36 | 1.26 | 0.62 | 0.69 |
| Ref | 2.39 | 25.00 | 2.45 | 9.09 | 3.88 | 3.56 | 1.75 | 2.08 |
| Ref | 2.06 | 1.04 | 1.97 | 2.17 | 2.58 | 2.51 | 0.54 | 0.30 |
| Ref | 0.43 | 0.85 | 4.87 | 0.36 | 0.69 | 0.63 | 0.16 | 0.08 |
| Ref | 3.08 | 6.81 | 0.97 | 1.23 | 0.39 | 0.51 | 1.15 | 1.03 |
| Ref | 0.89 | 0.89 | 0.28 | 0.11 | 0.12 | 0.15 | 0.34 | 0.26 |
| Ref | Ref | Ref | Ref | Ref | Ref | Ref | Ref | Ref |
| Education attainment | CI) | CI) | CI) | CI) | CI) | CI) | CI) | CI) |
| Lower secondary school | Ref | 13.16* | 0.85 | 1.46 | 0.37 | 0.49 | 1.17 | 1.14 |
| Ref | 2.72 | 13.16 | 3.02 | 17.36 | 0.12 | 0.14 | 0.34 | 0.29 |
| Ref | 9.75 | 131.35 | 3.02 | 17.36 | 1.21 | 1.66 | 4.03 | 4.56 |
| Higher secondary school | Ref | 3.51 | 5.74 | 1.07 | 1.68 | 0.37 | 0.56 | 0.96 | 0.83 |
| Ref | 9.75 | 131.35 | 3.02 | 17.36 | 1.21 | 1.66 | 4.03 | 4.56 |
| Ref | 0.98 | 0.66 | 0.30 | 0.14 | 0.12 | 0.17 | 0.28 | 0.21 |
| Ref | 12.57 | 50.01 | 3.82 | 19.87 | 1.21 | 1.89 | 3.30 | 3.29 |
| Preparatory course | Ref | 3.08 | 6.81 | 0.97 | 1.23 | 0.39 | 0.51 | 1.15 | 1.03 |
| Ref | 0.89 | 0.89 | 0.28 | 0.11 | 0.12 | 0.15 | 0.34 | 0.26 |
| Undergraduate or above | Ref | 13.16* | 0.85 | 1.46 | 0.37 | 0.49 | 1.17 | 1.14 |
| Work status | 10.65) | 52.30) | 3.39) | 13.41) | 1.24) | 1.69) | 3.88) | 3.99) |
|-------------|--------|--------|-------|--------|-------|-------|-------|-------|
| Full-time   | Referenc | Referenc | Referenc | Referenc | Referenc | Referenc | Referenc | Referenc |
| Part-time   | 0.93 (0.54, 1.60) | 2.74 (0.53, 14.19) | 1.03 (0.65, 1.62) | 1.27 (0.40, 3.98) | 1.02 (0.68, 1.54) | 0.82 (0.54, 1.50) | 1.42 (0.90, 2.26) | 2.02* (1.18, 3.47) |

* P < 0.05; The values reported in the table are adjusted odds ratios and their 95% Confidence intervals (CI)

Note: 1. Manual labourer: service/sales workers and craft workers, plant/machine operators and assemblers, elementary workers, and farm workers, animal husbandry workers and fishermen, occupations unidentifiable or inadequately described.

Table 4. Association of personal protection behaviours with workplace policy among different occupation groups

| Availability of workplace guideline and measures | Adjusted OR¹ (95% CI) |
|-----------------------------------------------|-----------------------|
| **H Hand wash before meals**                   |                       |
| a Manager                                      | 4.56* (1.64, 12.63)   |
| n Professional                                 | 1.13 (0.52, 2.48)     |
| d Associate professional                       | 0.33 (0.06, 1.70)     |
| H Clerical workers                             | 6.09 (0.84, 44.40)    |
| y Manual labourer²                             | 4.76* (1.10, 20.69)   |
| **g Hand wash after toileting**                |                       |
| i Manager                                      | 9.35 (0.40, 216.31)   |
| e Professional                                 | 1.41 (0.11, 17.90)    |
| n Associate professional                       | ...³                  |
| e Clerical workers                             | ...³                  |
| Manual labourer                                | ...³                  |

| Use of alcohol hand rub                        |                       |
| Manager                                       | 1.53 (0.60, 3.91)     |
| Professional                                  | 1.09 (0.55, 2.17)     |
| Associate professional                         | 0.77 (0.26, 2.24)     |
| Clerical workers                              | 0.36 (0.08, 1.75)     |
| Manual labourer                               | 6.21* (1.54, 25.12)   |

| **F Wear Mask**                                |                       |
| a Manager                                      | 9.52* (1.79, 50.53)   |
| c Professional                                 | 2.00 (0.47, 8.55)     |
| e Associate professional                       | ...³                  |
| M Clerical workers                             | ...³                  |
| a Manual labourer                              | 3.49 (0.24, 51.32)    |
**Put disinfectants into toilets**

| Role                     | Adjusted OR (95% CI) |
|--------------------------|----------------------|
| Manager                  | 0.68 (0.28, 1.65)    |
| Professional             | 1.03 (0.55, 1.95)    |
| Associate professional   | 0.71 (0.27, 1.86)    |
| Clerical workers         | 2.39 (0.70, 8.10)    |
| Manual labourer          | 3.46 (0.86, 14.00)   |

**Put disinfectants into drain-pipe**

| Role                     | Adjusted OR (95% CI) |
|--------------------------|----------------------|
| Manager                  | 0.69 (0.29, 1.63)    |
| Professional             | 0.85 (0.45, 1.60)    |
| Associate professional   | 0.47 (0.19, 1.21)    |
| Clerical workers         | 2.42 (0.62, 9.50)    |
| Manual labourer          | 2.91 (0.76, 11.17)   |

**Avoid leaving home**

| Role                     | Adjusted OR (95% CI) |
|--------------------------|----------------------|
| Manager                  | 2.73* (1.04, 7.16)   |
| Professional             | 1.37 (0.72, 2.58)    |
| Associate professional   | 0.63 (0.22, 1.77)    |
| Clerical workers         | 1.57 (0.33, 7.40)    |
| Manual labourer          | 9.42* (2.14, 41.56)  |

**Avoid contacting neighbour**

| Role                     | Adjusted OR (95% CI) |
|--------------------------|----------------------|
| Manager                  | 4.98* (1.81, 13.72)  |
| Professional             | 1.21 (0.59, 2.51)    |
| Associate professional   | 0.55 (0.18, 1.71)    |
| Clerical workers         | 2.34 (0.45, 12.21)   |
| Manual labourer          | 4.58* (1.09, 19.22)  |

* P < 0.05

Note: 1. Adjusted ORs in this table were estimated in separate ordinal logistic regression models of personal protection behaviours with adjustment of covariates for corresponding occupation group, i.e. the estimates and confidence interval presented in this table all came from different models for different occupation groups where behaviour was dependent variable and workplace policy and other factors were independent variables. 2. Manual labourer: service/sales workers and craft workers, plant/machine operators and assemblers, elementary workers, and farm workers, animal husbandry workers and fishermen, occupations unidentifiable or inadequately described. 3. These estimates and confidence intervals were omitted in their regression models due to non-convergence.