

*Full Length Research Paper*

# Knowledge, attitudes and perceptions related to covid-19 among Beninese military

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The aim of this study was to assess the level of knowledge guiding attitudes, and to highlight the perceptions of Beninese military personnel towards COVID-19. This is a cross-sectional study conducted from May 18 to June 16, 2020 in the garrison of Cotonou through the administration of an anonymous questionnaire to 836 participants. To assess the level of knowledge, major and minor criterion were defined. The level of attitude was assessed in relation to specific questions on the use of the hand washing device; the frequency of hand washing and the wearing of a mask. Above 50%, the level of general knowledge was considered "good". Statistics were analyzed by Stata 15.1. The mean age was 34.49 years. The sex ratio was 08.1. Officers were the most represented (55.27%). Soldiers from the 1st Motorized Intervention Battalion participated most in this study. It was found that 12.61% had a good level of knowledge and about 95% reported having a satisfactory attitude towards the coronavirus. Majority of participants (87.62%) declared that the pandemic had a negative impact on their lives. The level of knowledge of military personnel about the coronavirus is considered low. Initiatives based on appropriate information sources should be developed to strengthen their attitudes for better impact.

**Key words:** Knowledge, attitudes, perception, coronavirus, military personnel, Benin.

## INTRODUCTION

In December 2019, pneumonia was reported at the Huanan seafood market in Wuhan, China. Several months later, the epidemic spread to many provinces in China. COVID-19 was first reported by the World Health

Organization (WHO) on the 31st December 2019 and announced as a global pandemic on 11th March 2020 WHO Coronavirus disease (COVID-19) Situation Report–126, 2020). On 30th January 2020, the WHO Emergency

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Committee declared a global health emergency based on growing case notification rates at Chinese and international locations (WHO Coronavirus disease (COVID-19) Situation Report–91, 2020). The causative agent is a ribonucleic acid virus, and the disease has been named "COVID-19." As of January 8th, 2021, worldwide, there are 88,076,175 confirmed cases of COVID-19 with 1,898,983 deaths and 49,109,071 cured. Benin is also facing the pandemic with 3,362 confirmed cases of 3,362; 46 deaths; 3,222 as of January 10, 2021 (Gouvernement de la République du Bénin Informations Coronavirus, 2020).

At this date, the disease has no treatment and although several vaccines already exist, their efficacy has not yet been proven on a large scale (Amvene et al., 2020). Prevention then remains the mainstay of stopping the spread of infection through interventions. As is the case in all other regions, African citizens should adhere as much as possible to WHO's guidelines on prevention. Personal hygiene, in particular regular handwashing, is vital, as is being informed about COVID-19 and ensuring that any information comes from reliable source (Payne, 2020). The knowledge, attitudes and practices (KAP) toward COVID-19 play an integral role in determining a society's readiness to accept behavioral change measures from health authorities. KAP studies provide baseline information to determine the type of intervention that may be required to change misconceptions about the virus. Assessing the KAP related to COVID-19 among the general public would be helpful to provide better insight to address poor knowledge about the disease and the development of preventive strategies and health promotion programs (Reuben et al., 2020)

The population of the Benin Armed Forces is also sensitive, and the medical services of the armed forces have implemented in a timely manner an aggressive strategy with targeted primary, secondary and tertiary prevention modalities. At the beginning of the pandemic in Benin in March 2020, the military was long called upon by the State to deploy equipment, secure borders and secure treatment and screening sites. As a population at-risk, by their intervention at various levels, it therefore appears necessary to take stock of the knowledge, attitudes adopted and perceptions by these staff in order to decide what measures to be taken to prevent coronavirus contamination in the performance of their function. This is why it is important to conduct this study in this at-risk population, as military personnel are present to secure sites for the care of patients with COVID and for logistical deployments. Documentary research has revealed that there are some studies of Knowledge, Attitudes and Perceptions (KAP) related to COVID-19 in specific populations around the world. (Hager et al., 2020; Azlan et al. 2020; Bakaeen et al., 2021). In Benin, a study was conducted on KAP related to COVID-19 among doctors in Cotonou, but no studies

had been carried out within the military population. There are few studies on the likelihood of coronavirus contamination in at-risk populations, including military personnel. The objective of this study was to assess the level of knowledge guiding the attitudes and perceptions of Benin armed forces personnel about coronavirus within the Cotonou garrison.

## MATERIALS AND METHODS

This is a cross-sectional study that took place from 18 May to 16 June 2020 in the various units of the Cotonou garrison. The non-probabilistic method was used with a technique by choice of convenience (access, availability). The census was comprehensive, it means that questionnaires were collected throughout the survey period. There is no predefined size. During this period, 836 participants were surveyed at the ten sites: the pre-test brought together 100 respondents while 736 were surveyed during the proper test. After clearing the database by excluding the missing data, the analysis covered 769 respondents. A questionnaire was administered by trained investigators and included five items: General Information, Handwashing, Safety Distance, Mask Wearing and Experience. These items were grouped into demographic and socio-professional factors. There is no reference that is based on the definition of our criteria. We have defined the level of knowledge of the military with regard to COVID-19 in major and minor criteria. We have chosen this classification on this basis because, according to our assessment:

- (i) Firstly, erecting the knowledge of the mode of transmission as a major criteria will allow to define prevention strategies. The same goes for the knowledge of barrier gestures to be adopted.
- (ii) Secondly, the other evaluated knowledge (symptomatology, knowledge of the environments of transmission of the virus) are minor criteria as their usefulness is only critical after the contamination.

The definition of criteria was such that the level of knowledge of the military would be good when it met the two major criteria and at least one minor criterion:

### Major criteria

- (i) Knowledge of how coronavirus is transmitted
- (ii) Knowledge of barrier gestures

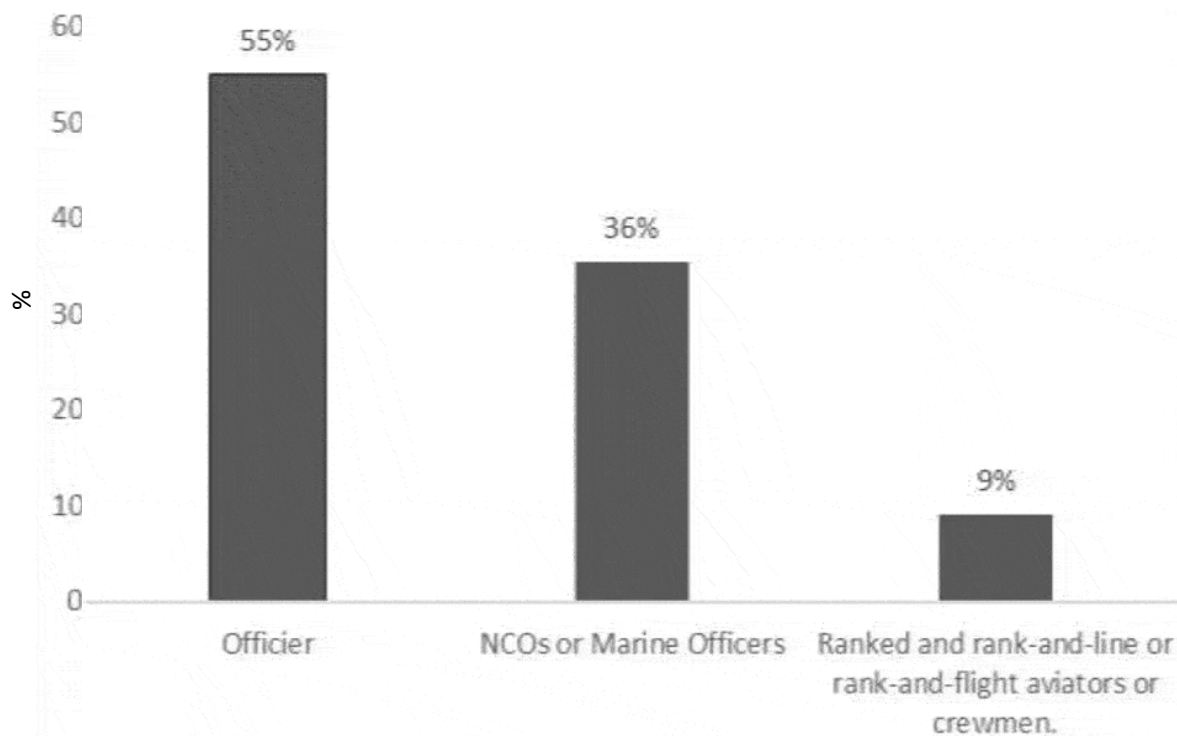
### Minor criteria

- (i) Knowledge of coronavirus symptoms
- (ii) Knowledge of the environments in which coronavirus can be transmitted.

The level of attitude was satisfactory when the member received a good answer for at least two of the following questions:

- (i) Attitudes towards the use of hand washing devices
- (ii) Attitudes to the frequency of hand washing
- (iii) Mask wearing

Also, general knowledge and general attitude were described as "low" when their proportion was between 0 and 50% and "good"



**Figure 1.** Distribution of military personnel by military categories in the Cotonou garrison in 2020 (n=769). The most represented military category is officers with a percentage of 55.27%.

when their proportion was greater than 50%. The questionnaires were analyzed with the Stata 15.1 software. The Chi Square test looked for links between the level of knowledge and other socio-demographic or occupational factors

Permission to carry out the study was requested from the Chief of Staff General. In the Beninese Armed Forces, the authorization and the ethical opinion are delivered by the competent structure placed under the authority of the Chief of Staff. This authorization was achieved from the Chief of Staff of the Beninese Armed Forces under the number N°20-0488/EMG/P.S.L/D.P/B.CH/SP-C of May 8, 2020. This approval was sufficient for the survey within the garrison. Participants could withdraw from the survey at any time, in accordance with the stipulations of the World Medical Association's Declaration of Ethical Principles of Helsinki (The World Medical Association (WMA) *Déclaration d'Helsinki de l'AMM, 2017*). The questionnaire was completely anonymous and did not cover questions that could affect the sensitivity or privacy of individuals. Informed consent was sought from respondents. From an ethical point of view, confidentiality is ensured by the fact that no question is linked to the profession and no participant could be identified through the process.

## RESULTS

The study involved 769 military personnel with an average age of  $34.49 \pm 6.03$  with extremes set at 20 and 58 years. Men were the most represented at 88.95% with sex ratio of 8.1. The military unit that participated the most in this study was the 1st Motorized Intervention

Battalion (15.21%) followed by the Republican Guard (14.04%). Most of the military resided in Cotonou (37.66%) Abomey-Calavi (34.46%)( Figure 1).

### Level of knowledge

Based on the definition of the major and minor criteria, the proportion of military personnel who had a good level of knowledge related to COVID-19 was 12.61% (IC 95%: [10.44%; 15.15%]). Since the general level of knowledge is between 0 and 50%, it can generally be said that military personnel have a low level of knowledge about coronavirus.

### Attitude level

On the one hand, ninety-four-point eight percent reported adopting a satisfactory attitude in the prevention of coronavirus. On the other hand, almost the majority (98.44%) reported wearing masks of any type; 98.96% reported using handwashing devices. Most of them reported washing their hands frequently (Table 1). With a general attitude of more than 50%, it can generally be said that military personnel adopt a good attitude towards coronavirus.

**Table 1.** Distribution of military personnel based on the criteria for their attitudes to coronavirus in the garrison of Cotonou in 2020.

Variable	Frequency(n=769)	(%)
<b>Wearing a mask</b>		
Yes	757	98.44
No	12	01.56
<b>Do you use the handwashing device?</b>		
Yes	761	98.96
No	08	01.04
<b>Attitudes to the frequency of hand washing</b>		
High frequency (5 times and more)	751	97.66
Low frequency (1 to 4 times)	18	02.34

**Table 2.** Relationships between Knowledge Level, Demographic Factors and Socio-Professional Factors in the Cotonou Garrison in 2020.

Variable	Level of knowledge(n=769)		p-value
	High	Low	
<b>Sex</b>			
Male	91 (13.30%)	593 (86.70%)	0.102
Female	06 (07.05%)	79 (92.94%)	
<b>Age</b>			
<30years	25 (15.43%)	137 (84.57%)	0.224
≥30years	72 (11.86%)	535 (88.14%)	
<b>Military categories</b>			
Officers	63 (14.72%)	362 (85.78%)	0.035*
NCOs or Navy NCOs	31 (11.31%)	243 (88.68%)	
Soldiers or aviators or crewmen.	67 (95.71%)	03 (04.29%)	
<b>Workplace</b>			
1st BG	12 (18.46%)	53(81.54%)	0.001*
1st BIM	25 (20.49%)	97 (79.51%)	
1st BTRN	12 (18.18%)	54 (81.82%)	
1st GB	08 (16.67%)	40 (83.33%)	
FN	01 (02%)	49 (98%)	
DSSA	18 (100%)	00	
FA	12 (18.46%)	53 (81.54%)	
GNSP	06 (98.36%)	55 (90.16%)	
GQG	09 (12.86%)	61 (87.14%)	
GS	03 (11.11%)	24 (88.89%)	
HIA-CHU-C	65 (95.59%)	03 (04.41%)	

\*p value &lt; 5%.

**Relationships between attitude level and variables**

The bivariate analysis between the level of knowledge and the variables revealed that there is a statistically

significant link between the level of knowledge and the military category and between the level of knowledge and the workplace (Table 2). There is no statistically proven link between the level of attitudes and certain institutional

characteristics such as wearing a mask and the existence of hand-washing devices in the workplace.

### **Perception and experiences of the military towards the COVID-19**

There are many experiences and perceptions of the military about COVID-19. They are reported below: 94(12%) of military personnel have been tested at COVID-19, at least once since the beginning of the pandemic; of those who were informed of the result, only about 2% tested positive for COVID-19; all members who were positive for COVID-19 claimed to have been supported by appropriate structures; about 3% of military personnel reported knowing a friend, relative or colleague who has been diagnosed positive for COVID-19 since the beginning of the pandemic; about 98% of the military personnel believe in the existence of Coronavirus; more than the majority (94.93%) claim that the pandemic has had an impact on their daily lives; majority of military personnel (87.62%) said the pandemic has had a negative impact on their daily lives; about 93.37% of the military personnel are afraid for their future or that of their families; 76% of them are socially afraid for their future or that of their families; 81.62% of the military personnel are afraid for their future or that of their families financially; 58.70 of them are afraid for their future or that of their families both financially and socially; about 97% said that COVID-19 is a security threat; almost all (99.10%) of the military personnel are convinced that coronavirus can be cured; 82.37% of military personnel described the pandemic at COVID-19 as "very serious". These perceptions allow us to have a global idea of the apprehension of the pandemic by the military and to finish appropriate strategies towards them.

### **DISCUSSION**

At the end of this study, the objectives were achieved. First, the demographic and socio-professional characteristics of the military have been described. Then the level of military knowledge as well as the level of attitude in the garrison of Cotonou on COVID-19 was determined. Then the perceptions of the military personnel in the garrison of Cotonou on COVID-19 were identified. The overall response rate in our study was 97.80%. Our study was a cross-sectional study with a questionnaire survey administered. This high response rate is consistent with the study by Grewal et al. (2020) which with a forecast of a sample size of 996 obtained 1231 responses which is much higher than expected; this study was also carried out in cross-sections with an online questionnaire on an online survey portal followed by a generated link.

The literature review reveals that this is the first and the

only one study evaluating knowledge, attitudes and perceptions about COVID-19 within the Benin army, which forms a sub-general population. Grewal et al. (2020) has conducted similar study in relation to the same target as the military personnel about "Knowledge, Attitudes, Practices and Behaviors towards COVID 19 among serving personnel of a large military garrison: A cross-sectional online survey".

### **Demographic and socio-professional factors**

The average age of the military officers surveyed was 34.49 years with extremes of 20 and 58 years and a standard deviation of 6.03 years. There were 55.27% officers, 35.63% NCO officers and 09.10% rank-and-file personnel. Grewal et al. (2020) reported similar results with an average age of 32.68 years, extremes of 16 to 60 years and a standard deviation of 7.14 years. The military category was different in this study: 10.80% of officers 11.69% of NCOs and 77.79% of rank-and-ranked and ranked soldiers. The rank profile is unique to each army, but it should be noted that our study has focused on personnel with a higher level of education (officers) and this can have a positive influence on the impact of information on their subordinates.

### **Level of knowledge**

This study shows that the military officers surveyed had little awareness of COVID-19. In fact, 12.61% of military personnel had a low level of knowledge. Grewal et al. (2020) obtained different levels of knowledge (appropriate knowledge 80%). The fact that a large volume of data for this study was continuously disseminated by the medical services could justify this level of knowledge. (Clements, 2020 ; Perkins et al., 2020) In our study, a lot of information existed, but the military personnel had not been sufficiently aware of the sorting between the well-founded information and the falsely prevalent information. Our results showed that there was a significant association between the level of knowledge and socio-professional factors of the military officers surveyed ( $p < 0.005$ ). In his study ODOI (2019), on Knowledge, Attitudes and Practices of Physicians practicing in Cotonou regarding COVID-19 did not note any significant association between the level of knowledge and the socio-demographic and individual characteristics of the physicians surveyed ( $p > 0.005$ ). There are several facts that could explain our results. First, because the military category is associated with the level of education in the armed forces, military officers and non-commissioned officers are more likely to document the epidemic on their subordinates. So, they are more likely to be informed.

### Attitude level

Also, 95.06% of the military had a satisfactory attitude towards COVID-19. Military perceptions of COVID-19 were varied and of various kinds, and were generally positive for the pandemic. Moreover, only 88 out of 769 military personnel (11.44%) had both a good level of knowledge, and a satisfactory attitude. And finally, the military category positively influenced the level of knowledge in a significant way ( $p=0.036$ ). The level of attitude was not significantly associated with the level of knowledge. At the beginning of the pandemic, false knowledge (even unfounded rumors) were of various kinds, both about the mode of transmission, which was not well known. As the mode of transmission was listed in our study as a major criterion for assessing the level of knowledge, this led to erroneous responses from respondents

The knowledge of the symptoms, which was listed as a minor criterion of appreciation of the level of knowledge, also gave rise to erroneous answers which were diverse. The knowledge of the environment (minor criterion) where the virus can be transmitted was also subject to incorrect answers ranging from one specific environment to another.

Despite the fact that several choices of answers were possible, when the answers were limited, the assessment of the level of knowledge was low. Attitudes were satisfactory in our study because at the beginning of the pandemic, the population was worried and even if they had little or no correct knowledge about the pandemic, barrier measures were applied systematically because communication was within reach of everyone at this level (wearing a mask, systematic hand washing with soap and water, social distancing). Gestures were mimed and attitudes were applied mechanically without understanding the basis or explanations for them. This explains why the attitudes were satisfactory because they were imitative even though the level of knowledge was low.

As the overall level of military knowledge of COVID-19 is low, steps must be taken to improve their knowledge. As this knowledge is predisposing to attitudes, these measures can go through the information channels available to the military personnel such as memos, reporting sessions to strengthen their level of knowledge about this pandemic. Despite the low level of knowledge, the level of attitude is satisfactory which can positively impact practices.

Several perceptions exist, and among those reported, it appears that the military personnel have a more or less good approach to the pandemic because beyond the consequences of this pandemic socially and on their families, they believe in its existence and in the possibility of healing, which is a decisive process in the management.

### Limitations

The main limitations of this study are:

- (i) The non-generalization of the results to the Beninese military population (limitations of the study methods and techniques used)
- (ii) The existence of certain biases that are imposed on the survey as a function of the health context (information bias related to the investigator: replication of information by unit commanders to personnel).
- (iii) The nature of the study (cross-sectional study) which does not allow the development of temporal relationships between the exposure factors and the event studied, that represents the level of knowledge of military personnel towards COVID-19.

### Recommendations

It is important to focus (in addition to prevention messages) on symptoms, modes of transmission and what to do in case of infection. It will also be necessary to:

- (1) Install more hand washing devices with sinks if no liquid washing machines are installed (automatic handwashing devices that pose the problem of safe disposal of contaminated water or filling of chlorinated water or soap);
- (2) Always adopt prescribed barrier measures;
- (3) Respect hygienic rules.

### Conclusion

At the end of this study, it appears that the level of military personnel knowledge of COVID-19 is considered to be quite low. It is therefore important to consider the recommendations made in order to increase this level of knowledge. Attitudes towards this pandemic should also be strengthened by messages encouraging good behavior. These initiatives will be based on appropriate sources of information and communications for a better impact among the military population.

### CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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conduct of this study; Battalions commanders of the different units for their readiness to carry out this study; the Chief army medical officer, Colonel Felix for his unwavering support to this study and the investigators for their availability.

## ABBREVIATIONS

**1st BG**, 1st Engineering Battalion, **1st BIM**, 1st Motorized Intervention Battalion, **BTRN**, Transportation Battalion, **1st GB**, 1st Armored Group, **COVID-1**, Coronavirus Disease 2019, **DSSA**, Directorate of the Armed Forces Health Service, **FA**, Air Force, **FN**, Naval Force, **GNSP**, National Military Firefighters Group, **GQG**, Headquarters Group, **GR**, Republican Guard, **GS**, Services Group, **HIA-CHU-C**, Military Teaching Hospital of Cotonou - University Hospital Center, **WHO**, World Health Organization, **SSA**, Armed Forces Health Service.

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