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# Do hospital workers feel they are ready to manage a sanitary crisis in a pre-crisis context?

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## **Abstract:**

**Objective:** Measure the perception of readiness to manage a sanitary crisis for hospital workers and to study the factors related to this perception.

**Methods:** This study is a cross-sectional study, 408 French hospital workers responded to an online questionnaire. The variables studied concerned the perceived personal preparedness, the perception of colleagues' and hospital's preparedness, perception of the situation and preparatory behavioral acts. Correlations, partial correlations, and multiple linear regressions were applied.

**Results:** Based on Pearson's correlations, the higher the participants' sense of personal efficacy and control over their behavior, the more ready they feel ( $r_p=.77^{***}$  and  $r_p=.55^{***}$ ). The more participants perceive their colleagues as ready and their hospital as prepared, the more ready they feel ( $r_p=.52^{***}$  and  $r_p=.46^{***}$ ). Based on Pearson's partial correlations, upon controlling the effect of preparedness perception, declared preparedness, is not significantly correlated with personal readiness perception ( $r_p=.01$ ).

**Conclusion:** The perception of personal readiness does not depend only on actual preparedness but also on individual and collective variables. Technically, these results confirm the value of relying on psychosocial variables during training. It would be interesting to propose empowerment in training courses. It also seems necessary to demonstrate crisis management efficacy at different levels: institutional, collective, and individual.

**Keywords:** Sanitary crisis; Disaster preparedness; Hospital workers; Readiness perception

## 1. INTRODUCTION

Recent examples highlight the risk of occurrence of a sanitary crisis, such as COVID-19 (CoronaVirus Disease appeared in 2019) pandemic. Climate change increases the risk of these crises, with emerging diseases associated with the warmer climate, which favors the transmission of pathogens and the multiplication of disasters, such as floods or heatwaves.<sup>1</sup> Our societies will likely face some sanitary crises in the coming years. The severity of a sanitary crisis depends not only on its intrinsic intensity, but also on the vulnerability of the exposed society.<sup>2</sup> To lessen the impact of these crises, organizational response is essential. Hospitals are a front-line service, the first refuge during sanitary crises.<sup>3</sup> The processes to prepare and manage these crises require efficiency that depends not only on a protocol and its strict adherence, but also on the way in which it is implemented by professionals.<sup>4,5</sup> For organizations and professionals, preparedness is essential to optimize the management of sanitary crisis.

Scientific literature has recently focused on assessing the preparedness of hospital workers for sanitary crises.<sup>6,7</sup> Research is mainly focused on declared preparedness. The psychosocial factors affecting preparedness are studied in the general population.<sup>8</sup> There is a lack of information on the psychosocial evaluation of hospital workers' preparedness for sanitary crises.

### 1.1. FACTORS INFLUENCING PERCEIVED PREPAREDNESS

According to the literature concerning the general public, many factors influence preparatory behaviors. Risk perception is a key precursor variable in the literature on public education on natural disaster risk.<sup>9,10</sup> Risk perception can be defined as the assessment of a risk, its probability and consequences.<sup>11</sup> This assessment is a subjective construction of risk, influenced by psychosocial variables. Therefore, a subjective dimension of risk perception needs to be added. The three most important variables in risk perception are perceived severity, perceived frequency and reported fear.<sup>12</sup>

Age and gender have an effect on adopting preparatory behaviors in the general population.<sup>13-15</sup> The influence of perceived self-efficacy on adoption of protective behavior against natural disasters has been highlighted.<sup>8,16,17</sup> Self-efficacy is defined by the belief that individuals can act in a variety of situations. Thus, it is not limited to the sum of the skills that individuals possess.<sup>18</sup>

This study tends to highlight the effect of variables that have not been assessed in recent literature. This study suggests that personal and professional involvement influences preparedness. The concept of personal and professional involvement was proposed by Rouquette in 1997. Personal involvement refers to the relationship an individual has with an object of social representation.<sup>19</sup> Social representations are defined as "a form of knowledge, socially developed and shared, having a practical aim and contributing to the construction of a reality common to a social whole".<sup>20</sup> The relationships between an individual and an object are based on three dimensions: the identification of the object ("I feel concerned"), the evaluation of the object (the perceived importance) and the perceived capacity for action (believing that the individual can him/herself act on this object).<sup>19</sup> For collective risks, the perceived capacity for professional action is added (believing that the individual can act on this object as a professional).<sup>21</sup> Diffusion of responsibility might influence the personal readiness perception. Diffusion of responsibility is a process of group influence; leading an individual to a loss of personal responsibility due to the social presence of others. It has been shown that in an emergency, this process can influence individuals not to act.<sup>22</sup> Finally, for hospital workers, the perceived colleague preparedness and perceived hospital preparedness might influence the concept of overall readiness perception.

## **1.2. PERCEPTION OF PREPAREDNESS, READINESS PERCEPTION AND DECLARED PREPAREDNESS**

A differentiation must be made between the perception of preparedness, the readiness perception, and the declared preparedness. The perception of preparedness refers to the feeling of being sufficiently prepared to manage a sanitary crisis. The readiness perception refers to the belief in the capacity to manage the sanitary crisis. Thus, people may believe that they can manage the crisis but at the same time, think that they are not well enough prepared. The contrary is also possible: one can feel sufficiently prepared, but nevertheless not believe he/she can manage the crisis. These notions are linked, but they refer to different beliefs. Declared preparedness refers to declaring that one has had preparatory behavior. Individuals may report having participated in preparedness training, but they do not feel sufficiently prepared or ready to manage a crisis. These definitions have been set up from a previous study (unpublished) from 43 interviews conducted with hospital workers from all over France from January 2019 to July 2019 on sanitary crises preparedness.

## **1.3. AIM OF THIS STUDY**

The objective of this study is to measure the hospital workers readiness perception and variables related to this perception. Answers to the following questions were sought in this study: Do hospital workers feel they are ready to manage sanitary crises in a pre-crisis context? What factors influence this readiness perception?

Given the exploratory nature of the study, the hypotheses are general :

- (H1) Readiness perception is linked to perceived personal preparedness.
- (H2) Readiness perception is linked to risk perception and personal involvement.
- (H3) Readiness perception is linked to perception of preparatory behavior.
- (H4) Readiness perception is linked to preparedness perception of colleagues and hospital.

## **2. METHODS**

### **2.1. STUDY SETTING, DESIGN, AND SAMPLE**

This study is a cross-sectional study. Participant inclusion criteria is that the participants must reside in France and practice their profession, whatever it may be, within a hospital. In France, 1.24 million employees were working in a hospital in 2015.<sup>23</sup> Based on this figure, with a 5% margin of error and 95% confidence level, the required sample size is 385 participants. 68 hospitals, 13 regional health agencies and groups of caregivers on social networks were contacted. The distribution method called "snowballing" was used to circulate an online questionnaire carried out using the Qualtrics© online survey and analyses platform. For this method, participants share to new contacts and these share to new contacts and so on.<sup>24</sup> The software prevents participants from answering the questionnaire more than once using their IP address. After getting information about the study, all the participants gave their written declaration of consent before answering the questionnaire. The data is confidential and anonymous. Ethical approval was not deemed necessary since this was a voluntary survey without disclosure of any personal identifiable or protected health information. We have no agreement with the participants' employers. This was made clear to the participants before starting the questionnaire. The questionnaire was released from 14<sup>th</sup> to 20<sup>th</sup> March 2020. The evolution of COVID-19 crisis was uncertain but the international context as well as forecasts suggested that hospital workers would have to manage a sanitary crisis. The questionnaire was sent before the overflow from hospital.

## 2.2. MEASUREMENT TOOLS

To our knowledge, there is no validated questionnaire that could have been applied in this context. Therefore, the measurement tool is a developed one. The questionnaire was inspired by the results of interviews conducted previously and by literature on personal and professional involvement<sup>21</sup>, risk perception<sup>12</sup>, the theory of planned behaviour<sup>25</sup> and disaster preparedness<sup>8</sup>. The questionnaire was pre-tested by 5 people to ensure that the items were well understood. The questionnaire contains 63 items including 17 items concerning the characterization of the hospital population in the form Boolean open-ended or multiple-choice questions. The variables are the experience of one or more sanitary crises, age, gender, profession, hospital department specialty, work experience, city and department of the hospital. The questionnaire includes 46 items about the supposed predictors of readiness perception. These items are put forward in a linear numeric response format, with statements followed by response scales ranging from 0 (I strongly disagree) to 10 (I strongly agree). Some items with satisfactory Cronbach's alpha scores are grouped into scales. These scores are presented in the following paragraph. The other variables mentioned are assessed by only one item. The variables are divided into four categories:

- a. Personal preparedness: perceived personal readiness (general perception of readiness, the perception of readiness for a sudden situation and the perception of readiness for an anticipated situation ( $\alpha=.91$ )), perceived personal preparedness (general perception of preparedness, knowledge and skills ( $\alpha=.83$ )), self-efficacy and declared effective preparedness. For these last variables, Boolean questions (yes/no) are used: participation in simulation exercises, participation in specialized training, participation in feedback from previous sanitary crises, reading the emergency plan and requesting information from sanitary crisis referents are tested.
- b. Risk perception and personal involvement: Perceived likelihood of occurrence, perceived severity, perceived fear, identification, and evaluation for the object, perceived personal and professional capacity for action.
- c. Perception of preparatory behavior: effectiveness of individual preparedness, effectiveness of collective preparedness, effectiveness of procedures, behavioral control (perception of "can do" actions to prepare and perception to be able to prepare ( $\alpha=.79$ )), injunctive norm from colleagues, injunctive norm from society, affective attitude (perception of preparedness as pleasurable and distracting ( $\alpha=.82$ )), cognitive attitude (perception of preparedness as helpful and prudent ( $\alpha=.92$ )), difficulty attitude (perception of preparedness as difficult and requiring effort ( $\alpha=.78$ )) and behavioral intention (intention to prepare in the future and in the coming months ( $\alpha=.79$ )).
- d. Perception of the colleagues' preparedness and the hospital's preparedness: perceived preparedness of colleagues (on hospital service and out of hospital service ( $\alpha=.90$ )), perceived readiness of colleagues (on hospital service and out of hospital service ( $\alpha=.93$ )), perceived hospital preparedness (material and human resources ( $\alpha=.84$ )), perceived hospital readiness and diffusion of responsibility.

## 2.3. DATA ANALYSES

The data was analyzed using SPSS© (Statistical Package for the Social Sciences) software. To determine the significance of the tests employed, we used the p-value. A test result with a p-value of less than 0.05 is considered significant. First, descriptive analyses allowed to observe the data were carried out. Then analyses of variance (ANOVA) was conducted to explore the

links between perceived readiness perception and categorical variables. Then, for variables with more than two categories, the differences in averages with each category pair tested by applying the Bonferroni correction. Then, Pearson's correlations between the variables according to the hypotheses and personal readiness perception were carried out. We then performed Pearson's partial correlations to control the effect of variables on the simple correlations. According to Cohen, the strength of effect sizes of correlation coefficients of .10 are small, those of .30 are medium, and those of .50 are large.<sup>26</sup> Therefore, multiple linear regressions were conducted with variables having a correlation coefficient ( $r_p$ ) greater than .30 and which retained a significant correlation (with a p value lower than at least 0.05), despite the control of other variables to determine the strongest predictors in the quantitative variables.

Items about declared preparedness (previously cited) were added together to make a score ranging from 0 to 5. Concerning diffusion of responsibility, 4 items are put forward to estimate the importance of the role of 4 categories of professions (paramedical, health managers, physicians and administrative). The average differences between the importance of the estimated role of their own category and the other categories are calculated.

### **3. RESULTS**

#### **3.1. PARTICIPANTS**

The sample includes 408 hospital workers. This is appropriate for the sample size required by our method. The sample includes 88.2% of women with an average age of 36.8 years (SD (Standard Deviation)=10.4). The sample is composed of 8 physicians, 38 health managers (A health manager is a hospital worker, exercising in the paramedical field who supervises and manages a team), 344 paramedics, 9 administrative and directing workers. 18.5% of the participants are undergraduates and 81.5% are postgraduates. Concerning experience, 35% of participants have worked for less than 5 years, 22.3% have worked between 5 and 10 years, 13.5% have worked between 10 and 15 years, 29.2% for more than 15 years and 29.9% of the participants have a prior experience of sanitary crises.

#### **3.2. MEAN READINESS PERCEPTION**

On a scale from 0 to 5, participants present an average score of declared preparedness (M (Mean)=2.16, SD=1.47). On a scale from 0 to 10, participants have a moderate score of readiness perception (M=5.19; SD=2.26) and preparedness perception to manage a sanitary crisis (M=4.93; SD=2.29). They have a medium score of perception of their knowledge as being sufficient (M=5.08; SD=2.71) such as their skills (M=5.31; SD=2.52). Participants have a high score of perception of their colleagues as being well-prepared (M=7.48; SD=2.18) and a lower score of perception of their readiness (M=6.00; SD=2.29). Participants have an average score of perception of hospital as being ready (M=5.38; SD=2.64), with a lower score of perception of human resources (M=4.43; SD=2.71) and materials resources as being sufficient (M=3.74; SD=2.50).

#### **3.3. VARIABLES LINKED TO THE READINESS PERCEPTION**

##### **3.3.1. ANALYSES OF VARIANCE**

Differences of personal readiness perception according to sociodemographic and experience factors are tested with analyses of variance followed by Bonferroni correction. Results are presented in the subsequent table (cf. Table 1).

There are no significant mean differences between the scores of personal readiness perception according to gender. However, the other differences in means according to other socio-demographic variables and experience are significant (cf. Table 1).

### 3.3.2. CORRELATIONS

Correlations between the personal readiness perception and all the variables mentioned above were tested (cf. Table 2).

INSERT TABLE 2 HERE.

Perceived personal readiness is positively correlated with perceived personal preparedness and declared preparedness. However, by controlling the effect of the perceived personal preparedness Pearson's partial correlations between declared preparedness and personal perceived readiness show that the correlation is no longer significant (the p value associated with the  $r_p$  between perceived personal readiness and declared preparedness is no longer less than 0.05). Similarly, partial correlations between perceived personal preparedness and personal perceived readiness controlling the effect of self-efficacy and behavioral control show that the coefficient r decreases to .28, with a p-value inferior to .001 (cf. Table 2).

Perceived personal readiness is not significantly correlated with items about risk perception and only partly significantly correlated with items about personal involvement. Evaluation and identification of the object are not correlated with perceived personal readiness, unlike personal and professional perceived capacity, for actions which are significantly and positively correlated with perceived personal readiness (cf. Table 2).

Personal perceived readiness is significantly correlated with variables about perception of preparatory behavior, except for cognitive attitude and injunctive norm from society (cf. Table 2).

Personal perceived readiness is significantly and positively correlated with variables about preparedness perception of colleagues and hospital but not with diffusion of responsibility. However, once we make partial correlations between perceived hospital readiness and personal perceived readiness by controlling the effect of the perceived readiness of colleagues, then the correlation is no longer significant. Once we make partial correlations between perceived preparedness of colleagues and personal perceived readiness by controlling the effect of the perceived readiness of colleagues, then the correlation is no longer significant (cf. Table 2).

### 3.3.3. MULTIPLE LINEAR REGRESSION

We carried out a multiple linear (stepwise) regression with variables having a r coefficient greater than .30, except for perceived hospital readiness, perceived colleagues' preparedness and declared preparedness which is no longer correlated, once controlling the effect of other variables. Tested variables are: Self-efficacy ( $r_p=.77^{***}$ ), perceived personal preparedness ( $r_p=.69^{***}$ ), perceived colleagues' readiness ( $r_p=.65^{***}$ ), behavioral control ( $r_p=.55^{***}$ ), perceived hospital preparedness ( $r_p=.45^{***}$ ) and effectiveness of hospital procedures ( $r_p=.35^{***}$ ). The model explains significantly more variability than a model without predictors  $F=187.81$ ;  $p<.001$ . It has an  $R^2$  of .71. Self-efficacy is the most important variable ( $B=.39$ ;  $\beta=.38$ ;  $t=8.71$ ;  $p<.001$ ) followed by the perceived colleagues' readiness ( $B=.30$ ;  $\beta=.31$ ;  $t=8.33$ ;  $p<.001$ ), perceived personal preparedness ( $B=.20$ ;  $\beta=.20$ ;  $t=4.94$ ;  $p<.001$ ), behavioral control ( $B=.10$ ;  $\beta=.09$ ;  $t=2.71$ ;  $p<.01$ ), and perceived hospital preparedness ( $B=.07$ ;  $\beta=.07$ ;  $t=2.18$ ;  $p<.05$ ) (cf. figure 1).

## **4. DISCUSSION**

### **4.1. RESULTS SUMMARY**

Results of this study show that years of work experience, profession, and previous experience of managing a sanitary crisis are related to the personal readiness perception: health managers, participants with more than 15 years of experience and those who have already experienced a sanitary crisis have a higher score of readiness perception than others. The readiness perception is linked to perceived personal preparedness but not with declared preparedness once we control the effect of perceived personal preparedness. The link between readiness perception and preparedness perception decreases because of the self-efficacy and behavioral control effect. Perceived personal readiness is not linked to risk perception items, identification and personal involvement evaluation items. Professional and personal capacity for action are linked to personal readiness perception. Personal perceived readiness is linked to perception of preparatory behavior, except for cognitive attitude and injunctive norm from society. Personal perceived readiness is linked to perception of readiness colleagues and perception of hospital preparedness but not with diffusion of responsibility. It is not linked to perceived hospital readiness and perceived preparedness of colleagues once we control the effect of the perceived readiness of colleagues. According to multiple linear regression, the variables most related to personal perceived readiness are self-efficacy, perceived colleague readiness, perceived personal preparedness, behavioral control and perceived hospital preparedness.

### **4.2. IMPLICATIONS OF THE RESULTS**

#### **4.2.1. PREPAREDNESS IS NOT ENOUGH TO FEEL READY**

Results of this study confirm the hypothesis that actual preparedness is not sufficient to predict the perception of personal readiness. Once controlling effect of perceived preparedness is carried out, declared preparedness is not related to personal readiness perception. The effect of perceived preparedness is not sufficient to predict the perception of personal readiness, self-efficacy and behavioral control are linked to this effect. So, it is relevant to focus on the perception of being ready rather than on the perception of being prepared and the actual preparedness.

When addressing the perception of self-efficacy, the concept of “self” is composed of one's direct experiences and evaluations formulated by people who are important to them.<sup>18</sup> This research reviewed the perception of their preparedness but not how skills resulting from preparedness are applied. According to the effect of self-efficacy, the perception of one's capacity to apply skills is relevant. This concept deserves an evaluation with more precise and complex scales. This exploratory study shows that a more in-depth analysis of this theme is necessary. The psychological preparedness is relevant. For example, managing one's emotions is a particularly interesting area to explore.<sup>27</sup>

#### **4.2.2. THE COLLECTIVE DIMENSION**

Results show that the collective dimension is an essential variable: the perception of colleagues as being ready is important in the model for predicting perceived personal. This latter result can also be put into perspective using the socio-cognitive theory and more specifically the collective self-efficacy theory. According to this theory, collective self-efficacy is defined as "the shared belief of a group in its joint capacities to organize and execute the actions necessary to produce given levels of achievement".<sup>18</sup> This concept consists of the social cohesion (i.e. trust and solidarity) required for collective action and the belief in efficiency in relation to specific tasks



that enable the conversion of social cohesion into collective action.<sup>28</sup> Given the task studied here and the importance of personal self-efficacy and the collective aspect, studying collective self-efficacy would be extremely interesting to deepen the importance of the collective dimension.

Results show that health managers feel more ready than paramedics. We assume that health managers feel more responsible for dealing with health crises, which could explain this result. This result suggests that the participants' place in the institution plays an important role in their personal perception of readiness. Research has shown that nurses are more inclined to mobilize during health crises when they trust their leaders and colleagues. The quality of leadership is also important for engagement during such crises.<sup>29</sup>

These results indicate that the individual cannot feel ready alone and can thus improve our understanding of the mechanisms involved through the concept of collective self-efficacy, leadership, or trust but not only. It is important to conceptualize the collective both as internalization by the individual and therefore as a socio-cognitive reconstruction.<sup>30</sup> This study puts forward that the effect of the group is an encouraging avenue. More specifically, the concepts of professional representations, leadership, cohesion, and group membership are promising elements.

#### **4.2.3. THE ABSENCE OF SIGNIFICANT CORRELATIONS BETWEEN READINESS PERCEPTION, RISK PERCEPTION AND INVOLVEMENT**

Personal and professional involvement and the perception of risk is not significantly related to the perception of readiness. The professional involvement modelled by Mias in 1998 could be used to understand these results. Involvement is composed of three dimensions: the meaning that links the objects that individuals face in their professional context, the reference points as a shared system of representation and the perception of control of their actions in a system of collective practices.<sup>31</sup> According to an unpublished study by Lac and De Zotti in 1999, in an unusual situation, reference points and the perception of control are no longer operative, whereas meaning would be activated to compensate for the ineffectiveness of the other dimensions.<sup>31</sup> Yet, the results show that the professional capacity for professional action is related to the perception of personal readiness. The perception of control of their actions in a system of collective practices is operating in this study. Further research needs to be carried out to understand why, in this context, this element may be operative. Regarding other measures used to assess professional involvement, it would be relevant to use the conceptualization of Mias to study its other components, such as the meaning and the reference point.

A study by Miceli in 2008 shows that the cognitive component of risk perception does not influence preparatory behavior, unlike its affective component.<sup>32</sup> The item concerning fear and gravity are probably not sufficient to assess the complex affective dimension of risk perception. A closer examination using the best psychometric tools deserves to be applied to compare these results.

The results show that perceiving preparatory behavior as distracting and pleasurable increases the perception of personal readiness. The results show that participants' sense of control over their ability to prepare positively related to the perception of personal readiness. Perceived effectiveness of preparedness also has an important effect. Thus, it is not the perception of the situation that impacts the perception of personal readiness, but rather the perception of the preparatory behaviors, both in themselves (attitude) and in their accessibility. These variables are used in the socio-cognitive theory when applied to sanitary crisis preparedness.<sup>17</sup> These

results suggest that this model is relevant for understanding the perception of personal readiness.

#### **4.3. LIMITATION**

The sample size corresponds to the required sample size according to our calculations. But the use of snowball sampling may have resulted in sampling bias. There may be statistical margin of error in results (95% confidence interval). Moreover, given the health context, few people are willing to respond, so the sample is not large enough to be considered representative of the population of hospital workers. Indeed, some hospitals contacted said that they did not wish to send the questionnaire to their workers in order not to overload them as they were already busy. Respondents may have a different engagement profile with the topic than non-respondents. There may be response bias, such as social desirability. Participants may have overestimated their readiness. Finally, there may be measurement error especially because it is a developed tool. As this study has an exploratory objective, many variables have been studied but the measurement tools do not provide a detailed analysis of these concepts. The variables were not assessed by multiple items.

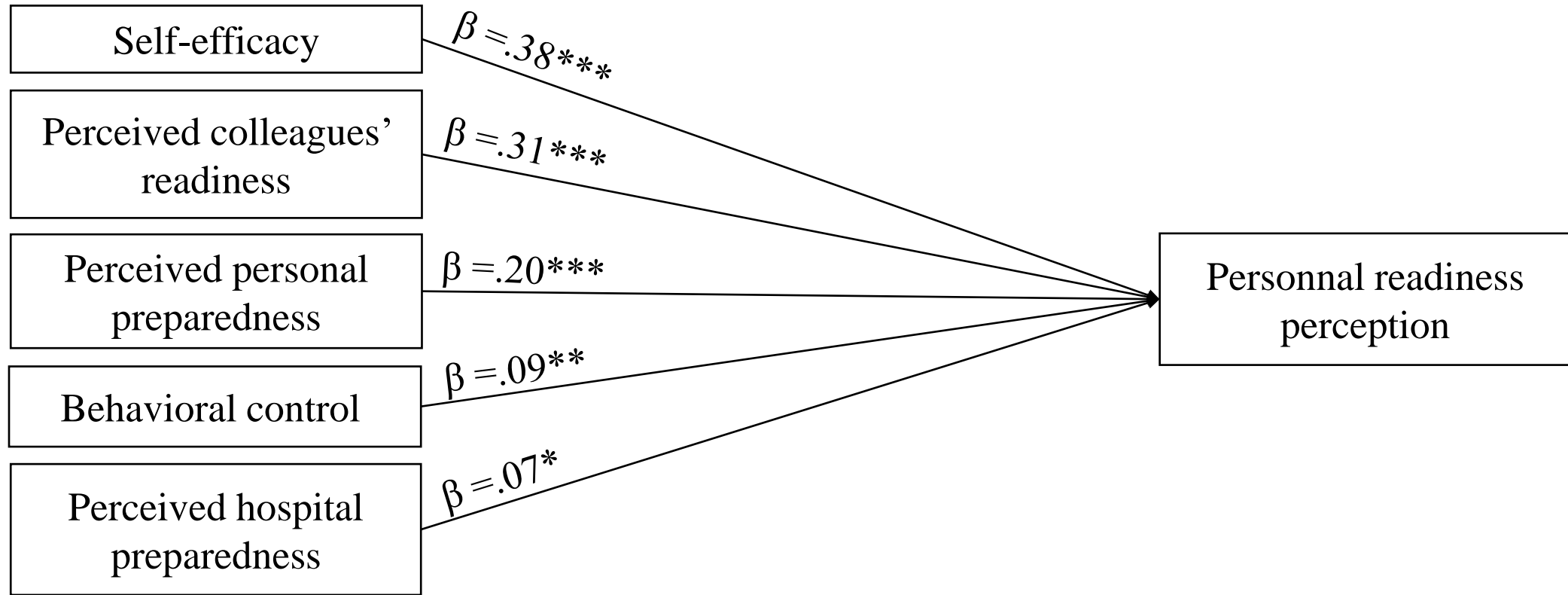
#### **5. CONCLUSIONS**

Perception of personal readiness is a complex process which deserves a psychosocial study combining individual and collective variables. Results disclose that the perception of personal readiness depends on individual variables, such as the perception of self-efficacy and on social variables, such as the perceived readiness of colleagues. Technically, these results confirm the value of relying on psychosocial variables during training. As results highlight self-efficacy and behavioral control, it would be interesting to propose empowerment in training courses to increase these perceptions. It also seems necessary to rely on crisis management capacity at different levels: institutional, collective, and individual. More specific research should be carried out to highlight the processes and their combinations that influence this perception. The sample may not be representative of the population. These findings may need to be qualified. The exploratory dimension of this study does not allow for a detailed analysis of the psychosocial mechanisms related to the perception of personal readiness; however, it does provide a promising first step.

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**Figure 1. Multiple linear regression model with perceived personal readiness as the dependent variable**

β : the β coefficient indicates the change in standard deviation of the DV (personal readiness perception) for each increase of one standard deviation of the IV (the model variables: self-efficacy, perceived colleagues' readiness, perceived personal preparedness, behavioral control and perceived hospital preparedness)

\*\*\*=p<.001

\*\*=p<.01

\*=p<.05

**Table 1**

**Analysis of variance after Bonferroni correction with personal readiness perception according to sociodemographic and experience factors**

Factor	Categories	Mean (Standard Deviation)	F <sup>b</sup>
Profession	Physicians	5.92 (1.71)	3.39**
	Paramedics <sup>a</sup>	5.09 (2.27)	
	Health managers <sup>a</sup>	6.31 (1.88)	
	Administrative and directing workers	4.50 (2.48)	
Level of diploma	BTEC First Diploma	6.25 (1.73)	3.87**
	Baccalaureate diploma	5.17 (2.17)	
	2 years of graduate	4.75 (2.50)	
	3 years of graduate <sup>a</sup>	4.91 (2.29)	
	5 years of graduate <sup>a</sup>	6.00 (2.05)	
	Ph.D	6.33 (1.33)	
Gender	Women	5.13 (2.29)	2.39
	Men	5.67 (1.98)	
Professional experience	< 5 years <sup>a</sup>	4.95 (2.33)	3.91**
	>5 and <10 years <sup>a</sup>	4.79 (2.43)	
	>10 and <15 years	5.33 (2.19)	
	> 15 years <sup>a</sup>	5.75 (1.97)	
Having experienced a sanitary crisis	Yes <sup>a</sup>	6.02 (2.20)	23.68***
	No <sup>a</sup>	4.84 (2.20)	
Having participated in a simulation exercise	Yes <sup>a</sup>	5.88 (2.10)	24.32***
	No <sup>a</sup>	4.75 (2.26)	
Having participated in a specific professional formation	Yes <sup>a</sup>	5.78 (2.14)	14.45***
	No <sup>a</sup>	4.89 (2.27)	
Having participated in a feedback on an anterior sanitary crisis	Yes <sup>a</sup>	6.21 (2.22)	23.99***
	No <sup>a</sup>	2.19 (2.19)	
Having read the hospital's emergency plan	Yes <sup>a</sup>	5.49 (2.20)	12.94***
	No <sup>a</sup>	4.64 (2.27)	
Having asked their references for information on managing sanitary crisis	Yes <sup>a</sup>	5.49 (2.32)	8.95***
	No <sup>a</sup>	4.64 (2.14)	

\*\*\* = p<.001

\*\* = p<.01

\* = p<.05

<sup>a</sup> categories where the difference between the means is significant after Bonferroni correction

<sup>b</sup> coefficient of Levene's test for equality of variances. If the test is significant then the differences are probably not due to chance

**Table 2****Correlations between personal perceived readiness and tested variables, sorted by the four dimensions explored**

Dimensions	Personal perceived readiness
Preparedness	
Perceived personal preparedness	$r_p = .69^{***}$
Declared preparedness	$r_p = .32^{***}$
Risk perception and personal involvement	
Perceived likelihood of occurrence	$r_p = .06$
Perceived severity	$r_p = -.07$
Perceived fear	$r_p = -.06$
Evaluation of the object	$r_p = .02$
Identification of the object	$r_p = .01$
Personal perceived capacity for action	$r_p = .19^{**}$
Professional perceived capacity for action	$r_p = .15^{**}$
Perception of preparatory behavior	
Affective attitude	$r_p = .18^{***}$
Cognitive attitude	$r_p = .07$
Difficulty attitude	$r_p = -.11^*$
Effectiveness of individual preparedness	$r_p = .21^{***}$
Effectiveness of collective preparedness	$r_p = .16^{**}$
Effectiveness of hospital procedures	$r_p = .35^{***}$
Behavioral control	$r_p = .55^{***}$
Injunctive norm from colleagues	$r_p = .17^{***}$
Injunctive norm from society	$r_p = .05$
Behavioral intention	$r_p = .22^{***}$
Self-efficacy	$r_p = .77^{***}$
Preparedness perception of colleagues and hospital	
Perceived hospital readiness	$r_p = .52^{***}$
Perceived hospital preparedness	$r_p = .46^{***}$
Perceived preparedness of colleagues	$r_p = .33^{***}$
Perceived readiness of colleagues	$r_p = .65^{***}$
Diffusion of responsibility	$r_p = -.10$

\*\*\* =  $p < .001$ \*\* =  $p < .01$ \* =  $p < .05$ 

$r_p$ : The  $r_p$  is the Pearson correlation coefficient. It indicates the strength and direction of the relationship between the two variables tested.