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COMMON MENTAL DISORDERS AND RISK PERCEPTION IN NURSING WORK AT COVID-19 HOSPITAL UNITS

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ABSTRACT

Objective: to analyze the associations between suspected Common Mental Disorders and risk perception in Nursing work at Covid-19 hospital units and to understand the elements intertwined in these relationships, from the workers' perspective.
Method: a parallel-convergent mixed-methods study, carried out with 327 Nursing workers from Covid-19 units in seven hospitals from the state of Rio Grande do Sul, Brazil. The quantitative data were collected through a sociodemographic, work-related and risk perception questionnaire, added to the *Self-Reporting Questionnaire* and subjected to inferential statistical analysis. The qualitative data were produced through semi-structured interviews and treated in the light of thematic content analysis.
Results: in all, 76.4% of the participants reported that their performance during the Covid-19 pandemic considerably or greatly increased the risks in their job. Regarding the risk exposure intensity, the workers consider themselves very exposed to the following risks: Covid-19 infection (51.4%); contaminating their family (45.9%); a family member developing a severe form of Covid-19 (46.5%); suffering psychological harms (47.7%); experiencing sleep (45.9%) or dietary pattern (40.7%) disorders; and isolating themselves from friends and family (48%). All of these variables were associated with suspected Common Mental Disorders. Qualitatively, it was evident that fear was the feeling signaling the intersection between risk perception and mental illness.
Conclusion: suspected Common Mental Disorders were associated with the perception of multiple risks, with fear as the main element intertwined in this relationship.

DESCRIPTORS: Covid-19. Nursing. Occupational risks. Workers' health. Mental health.

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TRANSTORNOS MENTAIS COMUNS E PERCEPÇÃO DE RISCO NO TRABALHO DE ENFERMAGEM EM UNIDADES HOSPITALARES COVID-19

RESUMO

Objetivo: analisar as associações entre a suspeita de Transtornos Mentais Comuns e a percepção de risco no trabalho da enfermagem em unidades hospitalares Covid-19 e conhecer os elementos imbricados nestas relações, na perspectiva dos trabalhadores.
Método: estudo de métodos mistos paralelo-convergente, realizado com 327 trabalhadores da enfermagem de unidades Covid-19 de sete hospitais do estado do Rio Grande do Sul, Brasil. Os dados quantitativos foram coletados por meio de um questionário sociodemográfico, laboral e de percepção de riscos, somado ao *Self-Reporting Questionnaire* e submetidos a analise estatística inferencial. Os dados qualitativos foram produzidos por meio de entrevistas semiestruturadas e tratados à luz da análise temática de conteúdo.
Resultados: 76,4% referiram que a atuação na Covid-19 aumentou consideravelmente ou muito os riscos no seu trabalho. No que tange à intensidade de exposição dos riscos, trabalhadores se consideram muito expostos ao risco de infecção por Covid-19 (51,4%); risco de levar a contaminação para sua família (45,9%); risco de que alguém da família desenvolva a forma grave da Covid-19 (46,5%); risco de sofrer danos psicológicos (47,7%); risco de sofrer alterações do sono (45,9); do padrão alimentar (40,7); e de se isolar de amigos e familiares (48%). Todas estas variáveis se mostraram associadas a suspeita de Transtornos Mentais Comuns. Qualitativamente, evidenciou-se que o medo era o sentimento balizador da intersecção entre a percepção de risco e o adoecimento mental.
Conclusão: a suspeita de Transtornos Mentais Comuns associou-se à percepção de múltiplos riscos, sendo que o medo foi o principal elemento imbricado nessa relação.

DESCRITORES: Covid-19. Enfermagem. Riscos ocupacionais. Saúde do trabalhador. Saúde mental.

TRASTORNOS MENTALES COMUNES Y PERCEPCIÓN DEL RIESGO EN EL TRABAJO DE ENFERMERÍA EN UNIDADES HOSPITALARIAS EXCLUSIVAS PARA COVID-19

RESUMEN

Objetivo: analizar las asociaciones entre sospecha de Trastornos Mentales Comunes y percepción del riesgo en el trabajo de Enfermería en unidades hospitalarias exclusivas para COVID-19 y conocer los elementos entrelazados en estas relaciones, desde la perspectiva de los trabajadores.
Método: estudio de métodos mixtos paralelo-convergente, realizado con 327 trabajadores da Enfermería de unidades exclusivas para COVID-19 de siete hospitales del estado de Rio Grande do Sul, Brasil. Los datos cuantitativos se recolectaron por medio de un cuestionario sociodemográfico, laboral y de percepción de riesgos, además de utilizarse el *Self-Reporting Questionnaire*, y se los sometió a análisis estadístico inferencial. Los datos cualitativos se produjeron por medio de entrevistas semiestructuradas y se los procesó sobre la base de análisis temático de contenido.
Resultados: el 76,4% indicó que desempeñarse en la atención a pacientes con Covid-19 aumentó considerablemente o en demasía los riesgos en el trabajo. Con respecto a la intensidad de exposición a los riesgos, los trabajadores consideran estar muy expuestos a los siguientes riesgos: infección por Covid-19 (51,4%); contaminar a su familia (45,9%); que algún familiar desarrolle la forma grave da Covid-19 (46,5%); padecer perjuicios psicológicos (47,7%); sufrir alteraciones en el sueño (45,9) o en los hábitos alimenticios (40,7); u aislarse de familiares y amigos (48%). Todas estas variables demostraron estar asociadas a la sospecha de Trastornos Mentales Comunes. Cualitativamente, se evidenció que el sentimiento que señalizó la intersección entre percepción de riesgo y padecimiento mental fue el miedo.
Conclusión: la sospecha de Trastornos Mentales Comunes se asoció a la percepción de múltiples riesgos, donde el miedo fue el principal elemento entrelazado en esa relación.

DESCRIPTORES: Covid-19. Enfermería. Riesgos ocupacionales. Salud de los trabajadores. Salud mental.

INTRODUCTION

The Coronavirus Disease (Covid-19), caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus, emerged in China in 2019 and has produced countless repercussions in different areas of society since then. It has affected workers' health, especially in the Nursing area, as these professionals work on the so-called front line, that is, providing direct assistance to affected individuals, at all care levels[1].

In Brazil, 65,029 Covid-19 cases and 872 deaths were recorded among Nursing workers until October 2023[2]. However, it is believed that the data can be underestimated, due to the difficulties identifying and reporting these health problems[1].

The pandemic scenario exposed Nursing professionals, especially those who work in hospital environments, to a daily routine of multiple occupational risks, of a physical and psychosocial nature[3]. Added to this, it accentuated historical weaknesses in the work processes. Excessive workloads, shortage of professionals, undersized teams, accumulation of functions and low remuneration were factors that interfered with the workers' physical and mental health[1,4].

This set of elements made them vulnerable to psychological distress and, consequently, more likely to develop psychiatric disorders[5]. A Chinese study carried out with nurses and health professionals working on the front line showed the development of mental illness, evidenced by post-traumatic stress disorder, depression, anxiety disorders and sleep disorders[6].

Another study, conducted in Japan, pointed out that between 20% and 30% of the nurses involved with Covid-19 patients presented significant mental distress. In addition to that, it was possible to observe a relationship between the number of Covid-19 patients, mental health and the workers' intention to leave the job since, as the number of patients increased, anxiety disorders and the intention to leave the job also increased[7].

Regarding the mental health of the Nursing team, Common Mental Disorders (CMDs) stand out. CMDs include a group of symptoms such as depressed mood, anxiety, insomnia, fatigue, irritability, and memory and concentration deficits[8-9]. Diverse scientific evidence has shown the prevalence of CMDs among Nursing workers in the hospital context and also at Covid-19 units, evidencing that the associated factors oftentimes include work-related elements[9-11].

Throughout the pandemic period, different studies were produced in Brazil focusing on front-line Nursing workers' mental health. A study carried out in Ireland identified post-traumatic stress symptoms in 45.1% of the sample comprised by 390 workers, as well as 38.7% of depressed mood[12].

Another study indicated that 68% had some depression, anxiety, insomnia and anguish level, with Nursing workers from Covid-19 units and nursing homes suffering the greatest impacts on their mental health[13]. However, to the present day, no evidence has been published showing the association between mental illness and risk perception, especially through the integration of qualitative and quantitative evidence.

It is important to give Nursing a voice since, as was the case in other epidemics, it has remained at the care front line for the population[14]. It is believed that analyzing the interface between nursing workers' perception of occupational risks and their mental illness reinforces scientific knowledge around the intersections between health and work, strengthening discussions about the social determination of illness, with work representing a relevant element among these determinants.

In the context of Nursing work in Covid-19 hospital units, these discussions may support the planning of actions that can mitigate harms to the mental health of these individuals who make up the front line. In addition to that, they will be able to strengthen their visibility, contributing to the search for better working conditions for the category.

Considering these aspects, the following research questions were developed: Is there any association between suspected CMDs and risk perception in Nursing work at Covid-19 hospital units? Which are the elements intertwined in these relationships, from the workers' perspective? Therefore, the study aimed at analyzing the associations between suspected CMDs and risk perception in Nursing work at Covid-19 hospital units and at understanding the elements intertwined in these relationships, from the workers' perspective.

METHOD

A multicenter, parallel-convergent mixed-methods study (QUAN+QUAL), where a cross-sectional correlational approach and a qualitative descriptive approach obtained the same weight, with the aim of triangulating the results and comparing the findings, seeking similarities, contrasts and complementarities[15]. The Mixed-Methods Appraisal Tool (MMAT) recommendations for quality and methodological transparency were adopted[16].

The research scenario consisted of seven medium- and large-size hospital institutions located in different regions of the state of Rio Grande do Sul, Brazil. Two were public institutions and the rest were philanthropic. To choose the institutions, their reference condition in the State Contingency Plan for combating Covid-19 in their respective meso-regions was considered. Therefore, hospitals from the Metropolitan, Mid-East, Southern Campaign, Mid-West, Southeast and Northwest meso-regions were included (the latter included two hospitals, located in different cities).

Units classified as Covid-19 were included: a respiratory screening unit; five urgency and emergency sectors; four clinical inpatient units; and four intensive care units (ICUs). These units were chosen because they are the main sectors for absorbing Covid-19 demand in their respective hospitals.

The study was carried out between September 2020 and July 2021. The study population was made up of 470 Nursing workers, that is, nurses and nursing technicians (there were no assistants in the institutions included). The eligibility criteria included being part of the institutions' permanent staff and working in at least one of the aforementioned units. Workers on vacation or on functional leave during the data collection period were excluded. In this study, it was decided to work with the entire eligible population, in order to obtain the highest possible response rate.

For the quantitative stage, a self-administered instrument was used, built on the Google Forms digital platform (*G Suite*® tool). When accessing the platform, each participant initially found the Free and Informed Consent Form (FICF), and agreement with the terms presented allowed access to the questionnaire.

The questionnaire contained sociodemographic and health variables that were constructed by the research team: gender; age; marital status; race; weekly hour load; employment contract; position/function; unit to which the professional was assigned; work shift; time in the profession; if the professional had any previous disease; and if the professional belonged to the risk group for Covid-19. Variables were also included for the perception of increased risks due to working on the front line in the fight against Covid-19 and for assessing the exposure intensity to risks such as: Covid-19 infection; developing the severe form of Covid-19; contaminating their family; a family member developing the severe form of Covid-19; suffering physical or psychological harms; suffering sleep changes; suffering dietary pattern changes; and isolating from family and friends.

To screen mental illness, the Self-Reporting Questionnaire (SRQ-20) was included, an instrument developed with support from the World Health Organization, validated, translated and adapted for the Brazilian context. SRQ-20 makes it possible to track CMDs (also called minor psychological disorders, which are mental illness non-psychotic conditions). It consists of 20 questions aimed at

symptoms experienced in the last 30 days, such as insomnia, fatigue, irritability, forgetfulness, difficulty concentrating and somatic complaints. The answers are dichotomized into “Yes” and “No” and the results may suggest suspected CMDs, through the identification of symptoms[17].

The participants’ contact details (phone number and email address) were passed on by the hospital institutions after approval by the ethics committee. The quantitative collection procedure followed the protocol of sending the questionnaire to these contacts and to the contacts of the Nursing references/managers of the Covid-19 units. These people announced the research and mobilized the teams to take part in it.

One of the institutions requested that collection be carried out in person. In this case, the questionnaires were delivered individually to the participants at the workplace, packed in an envelope with the FICF in two copies. Collection was made at the workplace by appointment with each worker.

The eligible population was made up of 470 workers (whose names and email and/or telephone contacts were provided by the institutions). Throughout the quantitative phase, there were 111 refusals and 32 losses attributed to incomplete questionnaires. Therefore, 327 Nursing workers participated in this stage, totaling nearly 70% of the eligible population (total response rate).

The qualitative stage included individual semi-structured interviews, also in a hybrid format (in-person and online), with a sample of five Nursing workers from each hospital institution (35 in total), selected through a simple random draw. The contingent of five deponents per institution aimed at strengthening the representation of the different institutions in the findings.

When carrying out the draws, twelve workers did not respond to the researchers, even when contacted three times. In addition to that, there were five refusals, whose main reasons were excessive work and research. In these cases (no answer or refusal), new draws were made until reaching five participants per institution.

When interviewing the 35th deponent, the material was subjected to pre-analysis for depth and relevance of the content obtained. The pre-analysis of all 35 interviews showed theoretical data saturation, an element that supported interruption of the data collection procedure.

The first interview was considered a pilot for adjustments to the semi-structured script. As no changes to the script were necessary, it was included in the database.

In five hospital institutions, the interviews were carried out in person, during working hours and according to an agenda with the workers. They were conducted by researchers with a PhD in Nursing and experience in data collection, assisted by two previously trained MSc Nursing students. The meetings were conducted in airy, safe and private environments, with all the necessary precautionary measures.

The semi-structured script included the following topics: perception of risks at work; and perception regarding the interface between risks and mental health. Two institutions requested that the interviews be carried out online. The Google Meet digital platform was used for this purpose (a G Suite® tool). No participant had difficulties accessing and using the platform. The online script was the same as the one applied in person.

The interviews lasted approximately 22.5 minutes. They were recorded with the consent of all participants and transcribed in full. The transcriptions made up the qualitative *corpus* of the study.

In the analysis stage, the quantitative data were coded and tabulated in an Excel spreadsheet, to be later imported into the SPSS statistical software, version 20.0. Absolute and relative frequencies were used to describe the sample.

SRQ-20 was analyzed by counting the number of individual affirmative answers. The score ranges from 0, indicating low probability of CMDs, to 20, indicating high probability. The cutoff point used was 6 affirmative answers for males and 8 for females[18]. Subsequently, associations between

suspected CMDs (dependent variables) and the increased risk perception and risk intensity variables (independent variables) were tested using Pearson's Chi-square test. A 5% statistical significance level was adopted.

In turn, the qualitative data were subjected to thematic content analysis[19], which takes place in three stages. The first stage, pre-analysis, was initiated by skimming to select material relevant to the study objective. The second stage, exploration of the material, included decomposition and coding of the statements into registration units, with the help of the NVivo software. The data were organized into a single category that compiled inferences about risk perceptions and interfaces with mental health.

The last stage, data treatment and interpretation, included theorization based on triangulation with the results from the quantitative stage. These results were approximated and compared, establishing complementary relationships that made it possible to achieve the study objective. This stage was completed with triangulation/combination with the quantitative data. This was eased by the construction of joint-displays, visual representations that illustrate triangulation/combination in mixed-methods designs[20].

When presenting these data, the interviewees were identified by the letter W (for "Worker"), followed by a random cardinal number. Numbering of the interviews was randomized in the database to reduce analysis bias, that is, to mix interviewees from different units and institutions.

The allocation unit was also identified: Urgency/Emergency or Covid-19 Respiratory Screening Units (Emerg. Covid-19); Covid-19 Inpatient Units (Imp. Covid-19); Covid-19 Intensive Care Unit (Covid-19 ICU); and more than one Covid-19 sector (Covid-19 Sectors).

Throughout all stages, the ethical precepts established by Resolutions 466/2012 and 510/2016 of the National Health Council were observed. The project was approved by a local research ethics committee.

RESULTS

All workers that met the eligibility criteria were invited, achieving a 70% response rate. There was predominance of people who identified themselves as women (n=278, 85%) aged up to 40 years old (n=200, 69.7%), white-skinned (n=260, 79.5%), and married or in a stable union (n=175, 53.5%). In relation to the position, nursing technicians prevailed (n=250, 76.5%), linked to the Consolidation of Labor Laws (*Consolidação das Leis Trabalhistas*, CLT) regime (n=212, 64.8%) and with weekly hour loads of up to 40 hours (n=200, 61.1%). In the sample under study, 23.3% (n=76) reported having some previous illness (i.e., prior to Covid-19). The sociodemographic, work and health characterization is detailed in Table 1.

It is noted that, among these participants, the most frequently mentioned previous diseases were cardiovascular (19.7%, n=15), musculoskeletal (11.8%, n=9), endocrine (10.5%, n=8) and psychological (10.5%, n=8). Among the participants, 7.9% (n=26) reported belonging to a risk group for Covid-19.

Regarding the perception of increased risks, 76.4% (n=250) reported that Covid-19 had considerably or greatly increased the risks in their job. As for the risk exposure intensity, in most variables a significant number of workers consider themselves to be very exposed, with emphasis on the following risks: Covid-19 infection (51.4%); contaminating their family (45.9%); a family member developing a severe form of CoviD-19 (46.5%); suffering psychological harms (47.7%); experiencing sleep (45.9%) or dietary pattern (40.7%) disorders; and isolating from friends and family (48%). Table 2 presents the results of the associations between the CMDs variable and the "perception of increased risks" and "intensity of risks" variables. Statistical significance is observed in all associations between CMDs and the risk perception and intensity variables, suggesting that the workers suspected of having CMDs perceive risks more intensely.

Table 1 – Sociodemographic, work and health characterization of the Nursing workers in COVID-19 hospital units. Rio Grande do Sul, RS, Brazil, 2020-2021 (n=327).

Sociodemographic, work-related and health characteristics	N	%
Gender		
Female	278	85
Male	49	15
Age group (n=287)		
Up to 40 years old	200	69.7
>40 years old	87	30.3
Marital status		
Married/Stable union	175	53.5
Single	152	46.5
Race/Skin color		
White	260	79.5
Not white	67	20.5
Hour load		
Up to 40 hours per week	216	66.1
41-80 hours per week	82	25
80+ hours per week	29	8.9
Type of contract		
Consolidation of Labor Laws	212	64.8
Statutory	81	24.8
Temporary	26	7.9
Other	8	2.4
Position/Function		
Nursing Technician	250	76.5
Nurse	77	23.5
Unit(s) where the professional works		
More than one Covid-19 unit	124	37.9
Other Covid-19 unit	61	18.6
Covid-19 ICU	48	14.7
Covid-19 unit and non-Covid-19 unit	36	11
Covid-19 Inpatient Unit	35	10.7
Covid-19 Urgency and Emergency units	23	7
Work shift		
Night	132	40.4
Day	123	37.6
Mixed	72	22
Time in the profession		
5+ years	213	65.1
<5 years	114	34.9
Previous diseases		
No	251	76.7
Yes	76	23.3
Suspected Common Mental Disorders		
No	211	64.5
Yes	116	35.5

Table 2 – Suspected Common Mental Disorders and their association with perception of increased risks and intensity of risks due to working in COVID-19 units. Rio Grande do Sul, RS, Brazil, 2020-2021 (n=327).

Variables	n (%)	CMDs (n=327)		p-value*
		No (211)	Yes (116)	
		n (%)	n (%)	
Perception of increased risks due to working on the front line in the fight against Covid-19				0.005
Covid-19 has hardly or not increased the risks at work	77 (23.5)	60 (28.4)	17 (14.7)	
Covid-19 has considerably or greatly increased the risks at work	250 (76.4)	151 (71.6)	99 (85.3)	
Risk of Covid-19 infection				0.017
Nothing or Little Exposed	56 (17.1)	43 (20.5)	13 (11.2)	
Partially Exposed	103 (31.5)	71 (33.8)	32 (27.6)	
Very Exposed	168 (51.4)	97 (45.7)	71 (61.2)	
Risk of developing severe Covid-19				0.018
Nothing or Little Exposed	124 (38.8)	90 (42.7)	34 (29.3)	
Partially Exposed	112 (34.2)	72 (34.1)	40 (34.5)	
Very Exposed	91 (27.8)	49 (23.2)	42 (36.2)	
Risk of contaminating their family				0.018
Nothing or Little Exposed	76 (23.2)	59 (28.0)	17 (14.7)	
Partially Exposed	101 (30.9)	64 (30.3)	37 (31.9)	
Very Exposed	150 (45.9)	88 (41.7)	62 (53.4)	
Risk of a family member developing severe Covid-19				<0.001
Nothing or Little Exposed	77 (23.5)	63 (29.9)	14 (12.1)	
Partially Exposed	98 (30)	64 (30.3)	34 (29.3)	
Very Exposed	152 (46.5)	84 (39.8)	68 (58.6)	
Risk of suffering physical harms				<0.001
Nothing or Little Exposed	129 (39.4)	99 (46.9)	30 (25.9)	
Partially Exposed	103 (31.5)	69 (32.7)	34 (29.3)	
Very Exposed	95 (29)	43 (20.4)	52 (44.8)	

Table 2 – Cont.

Variables	n (%)	CMDs (n=327)		p-value*
		No (211)	Yes (116)	
		n (%)	n (%)	
Risk of suffering psychological harms				<0.001
Nothing or Little Exposed	79 (24.1)	69 (32.7)	10 (8.6)	
Partially Exposed	92 (28.2)	74 (35.1)	18 (15.5)	
Very Exposed	156 (47.7)	68 (32.2)	88 (75.9)	
Risk of experiencing sleep changes				<0.001
Nothing or Little Exposed	83 (25.4)	76 (36)	7 (6)	
Partially Exposed	94 (28.7)	76 (36)	18 (15.5)	
Very Exposed	150 (45.9)	59 (28)	91 (78.5)	
Risk of experiencing eating pattern changes				<0.001
Nothing or Little Exposed	104 (31.8)	94 (44.5)	10 (8.6)	
Partially Exposed	90 (27.5)	68 (32.2)	22 (19)	
Very Exposed	133 (40.7)	49 (23.2)	84 (72.4)	
Risk of isolating from family and friends				<0.001
Nothing or Little Exposed	82 (25)	73 (34.6)	9 (7.8)	
Partially Exposed	88 (26.1)	63 (29.9)	25 (21.6)	
Very Exposed	157 (48)	75 (35.5)	82 (70.7)	

*Pearson's Chi-square test.

The process of integrating these findings with the qualitative data is illustrated in Figure 1, which shows the joint-display representative of the QUAN+QUAL triangulation/combination.

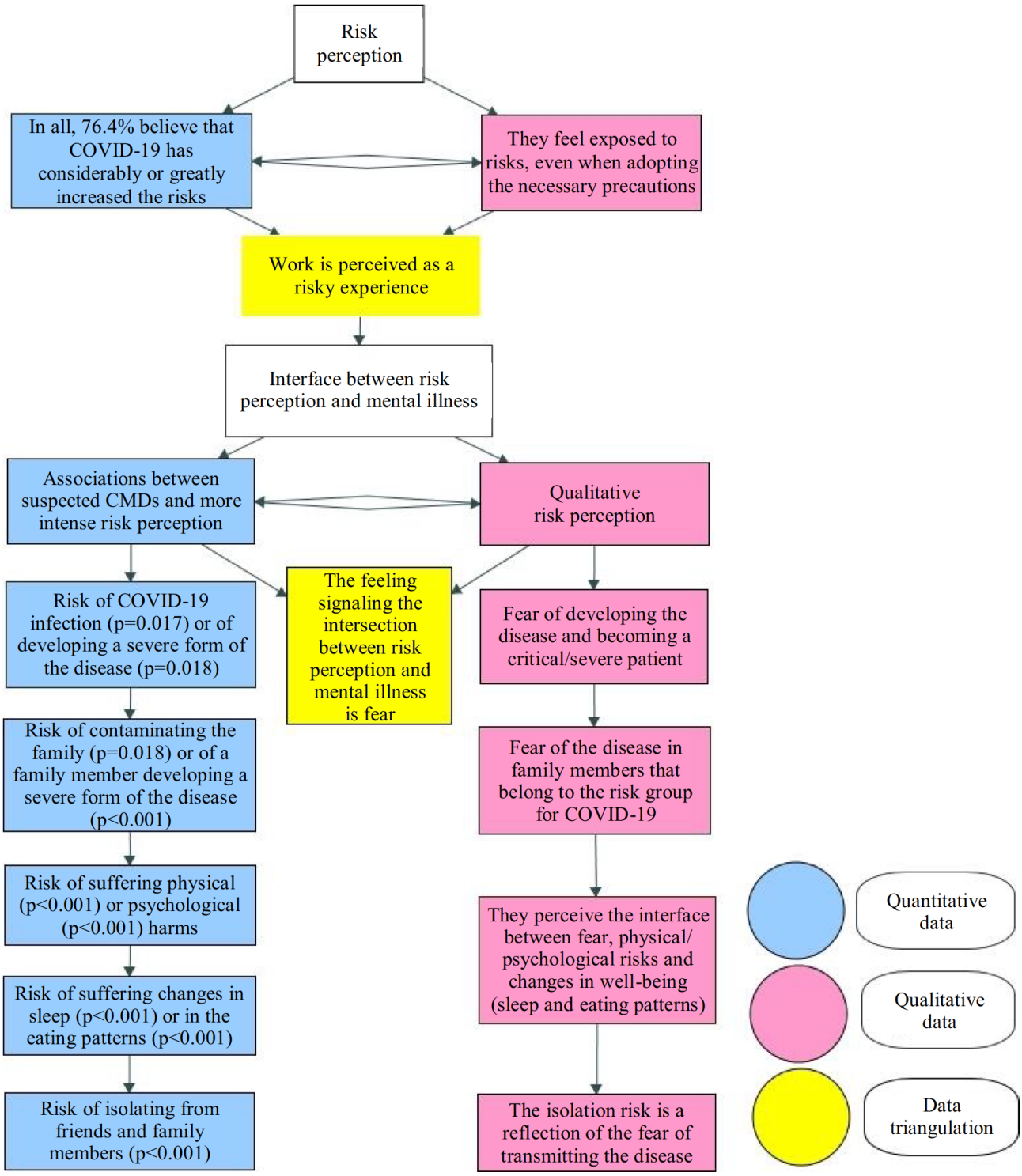

Figure 1 – Joint-display representative of the QUAN+QUAL triangulation/ combination. Rio Grande do Sul, RS, Brazil, 2020-2021.

In turn, the qualitative findings contributed to illuminating the intertwined elements in the relationships between mental illness and risk perception. In the interviews, the participants considered that, despite taking all precautions, they still felt vulnerable to the contamination risk:

[...] *working here in the* [Covid-19] *unit, I try to take care of myself as much as possible using PPE. But it's something I don't have control over. I can go out to get the car, the motorcycle, greet a colleague, touch, open a door handle, whatever. Talk to someone who may be infected for a minute* [...] (W25-Imp. Covid-19). [...] *no matter how careful you are, you never know. Some people say they caught it [Covid-19] without even leaving the house. We don't know how the disease will get to the house. Even taking a lot of precautions* [...] (W4-Emerg. Covid-19).

The qualitative data found statistically significant associations, confirming that risk perception had an interface with mental health. Content analysis suggested that the feeling that established this interface was fear. Firstly, the interviewees showed fear of the SARS-CoV-2 infection risk and, above all, of the risk of becoming critical/severe patients:

[...] *I'm very afraid of being here soon. Catching the coronavirus and being one of the intubated patients.* [...] (W1-Emerg. Covid-19). [...] *I've seen several cases of people with comorbidities, young people, going into the ICU, with a tube. Many of them died. I keep thinking and I get scared* [...] (W12-Emerg. Covid-19). [...] *I see these people* [*patients*] *and think: "If I'm intubated, will I get out? Will I get through this?"* [...] (W20-Emerg. Covid-19).

Fear was also evident when they identified the risk of contaminating their families, or that a family member would develop a severe form of the disease, especially relatives belonging to risk groups for Covid-19: [...] *I'm afraid of infecting a family member. Contaminate my mother, my grandparents who are aged.* [...] *carrying the virus and soon seeing a family member intubated here, in this situation* [...] (W1-Emerg. Covid-19).

[...] *fear of contaminating myself and contaminating the house. Fear of children being vectors and taking it to my mother, who is aged, diabetic, hypertensive and obese.* [...] *Anxiety got me* [...] (W9-Covid-19 ICU).

The risk of suffering physical and psychological harms was also evident in the testimonies, as well as the risks of suffering sleep and eating pattern changes. The statements reinforce the interfaces between fear, risk perception, physical impacts and mental illness:

[...] *it's anxiety, it's food, headache, stomach pain, gastritis... It seems like there is a dragon here, a sip of water gives you heartburn. I didn't have it before* [the pandemic]. *And this is all a matter of stress.* [...] *We will soon reach exhaustion, and then it's a jump to depression* [...] (W9-Covid-19 ICU). [...] *I was very hungry during Covid-19* [...] *I started at 6:30 pm* [...] *and only left at 8:30 am. I spent all this time without eating, because I saw contamination among professionals.* [...] *The cafeteria is where we go without masks. I stopped eating* [...] *I was very hungry during the day* [...] (W34-Covid-19 ICU).

[...] *It had a lot of* [psychological] *impact. I lose sleep. I wake up thinking that I'm in the hospital medicating, thinking that I forgot a patient. After this function started, it seems that I'm connected to 220 V. I leave here*, [...] *I get home and I take some time to relax. I became more stressed, I became more depressed, I became very worried* [...] (W26-Imp. Covid-19).

Finally, the risk of isolating from family and friends was also evident in the qualitative stage. It was shown that this is a reflection of the fear of contaminating their family members: [...] *I receive the minimum number of people in my house. I don't go almost anywhere because I'm scared.* [...] *I excluded myself from many things with my family.* [...] *I end up blaming myself, worrying and watching myself. I don't go* [to family gatherings], *I withdraw. I think that I isolate myself* [...] (W9-CoviD-19 ICU).

[...] *I used to come home from work, drink mate with my mother, talk, go out with my nieces. Everything in my life revolved around my family and my boyfriend. I started to no longer have contact*

because I'm very afraid of infecting other people. [...] *This caused me a lot of fear, a lot of anxiety, I became more and more isolated* [...] (W34-Covid-19 ICU)

Therefore, it is possible to perceive the interface between mental illness and risk perception in the Nursing routine at Covid-19 units. The data triangulation confirms that perceiving these risks intensely intersects with mental health aspects, with fear as the element that enhances this relationship.

DISCUSSION

The data evidenced that 7.9% of the participants considered themselves as belonging to a risk group for Covid-19, although 23.2% reported having diseases such as cardiovascular and endocrine ones. A Brazilian study carried out with 415 hospital Nursing workers during the pandemic showed that 26% of them fell into some risk group; the most predominant diseases were cardiovascular ones, obesity, diabetes and those affecting the respiratory tract[21].

A significant percentage of the sample under study (76.4%) reported that CoviD-19 had considerably or greatly increased the risks in their job. In addition to that, they considered themselves very exposed to the following risks: Covid-19 infection (51.4%); contaminating their family (45.9%); a family member developing a severe form of Covid-19 (46.5%); suffering psychological harms (47.7%); experiencing sleep (45.9%) or dietary pattern (40.7%) disorders; and isolating from friends and family (48%). Triangulation with the qualitative data contributed to revealing that Nursing professionals felt exposed and vulnerable to the contamination risk in different circumstances, even though they took the necessary precautions. These feelings are justified, as these workers were faced with the challenge of providing direct assistance to Covid-19 patients, which increased their occupational risks and required intense precautionary measures[22].

However, there is also diverse evidence that the perception of risks related to Covid-19 in the population is intersected by different elements, including information retention, familiarity with the epidemic situation and interpersonal proximity to suffering at the health crisis epicenter[23]. Therefore, it can be considered that the increase in fear among Nursing professionals can also be influenced by their daily immersion in the reality of Covid-19 hospital units.

Interfaces between risk perception and mental illness were evidenced. Suspected CMDs had a statistically significant association with the risk of Covid-19 infection ($p=0.017$) or of developing a severe form of the disease ($p=0.018$). The qualitative data suggested fear of developing the disease and becoming a critical/severe patient.

A Brazilian study carried out with 415 hospital Nursing workers during the pandemic found that 184 (44.3%) participants were infected by Covid-19. Of these, 16 (8.7%) had to be hospitalized for treatment and four (2.2%) required intensive care[21]. Another study carried out with Nursing workers from Covid-19 hospital units showed that they recognized cases of illness and death of professional colleagues, which increased their experiences of fear due to being on the front line[11]. These data are in line with the participants' feelings regarding the various situations of vulnerability to which Nursing was exposed during the pandemic.

The risk of contamination and illness due to Covid-19 is described as an element that increases Nursing workers' mental distress, which reflects the psychological risks that are added to the physical ones. It is known that, in some institutions this feeling was reinforced by the precarious working conditions, especially with regard to PPE availability and adequacy, to weaknesses in the description of protocols and flows for effective infection control and to extended working hours[24].

An association was identified between CMDs and the risk of contaminating their family ($p=0.018$) or of a family member developing a severe form of the disease ($p<0.001$). The qualitative data revealed fear of illness among family members who belonged to a risk group for Covid-19.

A cross-sectional study carried out with hospital nurses evidenced associations between the fear of spreading SARS-CoV-2 to family members and friends and an increase in the prevalence of anxiety, depression and stress[25]. Another study, carried out with hospital workers during Covid-19, highlighted the association between the prevalence of stress and fear of contamination during work and virus transmission to family members and friends[22]. Therefore, the hypothesis is reinforced that the risk perception also includes the prospect of loved ones becoming ill, which contributes to mental illness.

The study results showed an association between suspected CMDs and the following risks: suffering physical or psychological harms ($p<0.001$) and suffering sleep ($p<0.001$) or eating pattern ($p<0.001$) changes. When combining the data, the interfaces between fear, physical/psychological risks and changes in well-being (sleep and eating pattern) were highlighted.

It is known that Covid-19 exerted impacts on Nursing professionals' physical, mental and psychosocial health. The work-related harms oftentimes manifested themselves in the form of emotional distress, anger, anxiety, frustration, loneliness and isolation[26]. The World Health Organization identified that, throughout the world, Nursing professionals who worked on the front line faced the risks of contamination by SARS-CoV-2 and of suffering other physical and psychological harms on a daily basis. These risks were aggravated by overload, fatigue, wear out, stigma and various forms of violence[27].

The risks to sleep quality were examples of these impacts. There is diverse evidence in the scientific literature that Nursing workers have experienced harms to their sleep quality due to psychological and emotional aspects[9-10]. A cross-sectional study conducted in China with a medical and nursing team working in a hospital designated for Covid-19 found diverse evidence that sleep disorders had a statistically significant association with suspected CMDs in the sample under study[28], which strengthens the interface between sleep impairments and experiences at work.

The risk of developing dietary pattern changes, associated with suspected CMDs, seems to follow the same logic, considering that dietary changes among Nursing workers are oftentimes related to their working conditions[29]. A qualitative study carried out with front-line Nursing professionals evidenced that impairments in eating patterns are oftentimes the result of standard precautionary measures, such as PPE use, in addition to overload and intensification of the work pace[30].

However, it is noted that this phenomenon is also associated with mental health aspects. It is known that sleep and eating disorders oftentimes coexist in the everyday lives of professionals who are on the front line fighting the pandemic, as they are related to the same stressors[31], which is in line with the findings of this study, as they show the synergy between these risks and psychological illness.

Finally, the findings showed a statistically significant association between suspected CMDs and the risk of isolating from friends and family members ($p<0.001$). The qualitative findings contributed by revealing that the isolation risk existed as a reflection of the fear of transmitting the disease.

A cross-sectional study was carried out with undergraduate and graduate students, as well as Higher Education professionals from different areas in different Brazilian regions during Covid-19. The data showed that social isolation was associated with depression. The following was also found: use of illicit substances; excessive concerns about spread of the disease; use of psychoactive medications without any medical prescription; and impairments in interpersonal relationships[32]. Given this, it can be thought that, in addition to being front-line workers, Nursing professionals were also affected as ordinary citizens during the health contingency measures.

However, it is also important to highlight front-line performance as an aspect related to this phenomenon. Nursing represented an essential workforce during the COVID-19 pandemic and was at the epicenter of patient care. However, the need to protect their own family members and friends made the professionals seek to distance themselves from their emotional relationships, which

promoted isolation and loneliness during the period[1,33]. It is also known that, family, financial and social conditions oftentimes did not allow this distancing[1], which increased the professionals' fear related to transmission of the disease among their loved ones.

When analyzing and discussing the findings of this study, the perception is corroborated that the analysis corresponding to the health of Nursing professionals who worked to combat Covid-19 highlights their multiple vulnerabilities. In facing Covid-19, the workers challenged themselves to provide care in an unknown scenario full of risks[34]. Discussing the professionals' fears, desires and insecurities strengthens the importance of the workers' health care policy, which can be implemented through measures to prevent and control contamination in the workplace. Promoting adequate hospital structures and actions to promote mental health at work should be added to the aforementioned[33].

It is agreed that deconstructing stigmas surrounding health and mental illness in Nursing can remove people from a situation of helplessness and equip them to seek support[35]. Therefore, the findings of this study may be useful to formulate institutional and university extension actions aimed at promoting mental health and preventing work-related diseases. Based on this study, these actions will be able to retrieve the fears raised during the pandemic related to the workers' mental health, focusing on the elaboration of collective coping strategies capable of strengthening the category. Thus, the anguish experienced during this period can be given a new meaning so that individuals can, in the near future, make the transition to the post-pandemic period without inheriting the psychological harms from their front line experience.

Some limitations of this study should be highlighted. The data were collected over approximately one year, between 2020 and 2021. This period was permeated by different phases of the pandemic. Therefore, some findings may be a reflection of the specific time when they were collected. In addition to that, it should be noted that carrying out the interviews in the workplace (therefore, in a context marked by the pressures of the work environment) and with intense PPE use may have challenged the conversations between participants and researchers at times. Finally, it is important to point out that the data should be interpreted with caution, as the sample is not probabilistic, thus precluding data generalization.

CONCLUSION

In this study, 76.4% of the Nursing workers in Covid-19 hospital units reported that working on the front line considerably or greatly increased the risks in their job. In addition to that, a significant number of participants felt very exposed to the infection risk for themselves and their families, as well as of suffering physical and psychological harms and isolation. Qualitatively, it was noticed that the participants felt exposed and vulnerable to the contamination risk, even though they took the necessary precautions. Therefore, it can be inferred that work was perceived as a risky experience.

All risk perception variables investigated in this study were associated with suspected CMDs. The triangulation/combination of the QUAN+QUAL data showed that the guiding feeling at the intersection between risk perception and mental illness was fear. At the end of this study, it can be concluded that suspected CMDs were associated with the perception of multiple risks, with fear as the main element involved in this relationship.

It is suggested that new studies be carried out to investigate these professionals' mental health in the post-pandemic period. In the coming years, it will be important to understand how the pandemic has transformed the relationships between subjectivity and work. Understanding these elements will be important for new approaches to Workers' Health.

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NOTES

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CONFLICT OF INTEREST

There is no conflict of interest.

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