

Postprint version : 1.0
Journal website : <http://www.ijpcm.org/index.php/ijpcm/article/view/1080>
Pubmed link :
DOI : 10.5750/ijpcm.v11i2.1080

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Perceived resilience and patient safety of Dutch nursing staff during the COVID-19 pandemic

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ABSTRACT

Background: The COVID-19 pandemic imposed enormous challenges for healthcare professionals. Nursing staff had to work under psychological pressure to maintain patient safety. Resilience has proven to be a protective psychological health factor that can safeguard healthcare professionals' mental health and well-being during healthcare crises. The state of resilience among Dutch healthcare professionals is not yet known.

Objective: This study investigated perceived resilience and perception of patient safety during the COVID-19 pandemic among Dutch nursing staff. Additionally, individual differences in resilience were examined in relation to patient safety.

Method: An online survey about resilience and patient safety was sent to 2,611 members of the Dutch Nursing Staff Panel in June 2021, after the third wave of the COVID-19 pandemic in the Netherlands.

Results: 884 certified nursing staff professionals completed the survey (33% response rate). Nursing staff considered themselves resilient with a positive perception of patient safety within their organization. Factors that influenced resilience were education, age, part-time employment, experiences with treating patients with a COVID-19 infection, and having suffered from a COVID-19 infection. Nursing staff who perceived higher resilience reported to act more flexible during their work, to encounter more unexpected situations and they found that working according protocols and guidelines had improved during the pandemic.

Discussion: The results show a more positive pattern compared to other European countries. In the Netherlands, nursing staff considered themselves as highly resilient.

Conclusions: Resilient healthcare professionals report to be better able to handle crises such as the COVID-19 pandemic. Optimally, strengthening individual

resilience for the healthcare organization may secure the patient safety of health care in the future.

Background

The COVID-19 pandemic has a major impact on healthcare systems and healthcare professionals worldwide, including the Netherlands. At the beginning of the first pandemic peak in the Netherlands in February/March 2020, much was unknown about this new disease. There was a critical supply shortage of personal protective equipment. Many healthcare professionals were temporarily out of action due to ensuing infections. For the remaining healthcare professionals, the staff shortage increased the workload even more. Healthcare professionals therefore worked under enormous psychological pressure and had to continuously adapt and deal with expected and unexpected situations, to maintain patient safety and quality of care [1].

Indeed, studies confirm that stressful work environments negatively influence patient safety and quality of care [2]. Formulating effective organizational strategies that support healthcare professionals on the frontlines of present and future healthcare crises is thus of vital importance. To come up with organizational strategies, we however first need to know the protective factors for professionals' health.

A protective psychological health factor that has proven to safeguard mental health and well-being during healthcare crises is resilience [3, 4]. Resilience is the mental ability to use personal resources to continuously adapt to challenges and look for opportunities to improve, even when faced with challenges [5]. Research conducted during earlier infectious disease outbreaks such as SARS, Ebola, and MERS-CoV already identified the protecting role of resilience against the mental health burden of caring for infected patients [6, 7]. Similar results were found in studies conducted during the COVID-19 pandemic from countries such as the United States, Spain, Italy, and China [3, 8, 9]. The state of resilience among Dutch healthcare professionals is so far not examined. Nurses are healthcare professionals who work at the forefront in providing care for COVID-19 patients. Investigating their resilience is therefore an important starting point for understanding quality of care during a crisis situation.

Objective

The present study investigated the perceived resilience and patient safety of Dutch nursing staff professionals during the COVID-19 pandemic. Concrete, we first examined to what extent Dutch nursing staff perceived themselves as resilient, together with the moderating role of demographic factors. Second, we looked at nursing staffs' perception of patient safety during the COVID-19 pandemic. In addition, we examined the moderating role of demographic factors. Third, we examined individual differences in resilience in relation to patient safety as perceived during the COVID-19 pandemic. As to our knowledge, resilience of healthcare workers in the Netherlands was not previously assessed, no specific hypotheses were therefore formulated.

Method

Participants and Procedures

An online survey was conducted in June 2021 after the third wave of the COVID-19 pandemic in the Netherlands. The Dutch government had just ended a lockdown. The number of infections and hospital admissions decreased rapidly and the vaccination rate increased to such an extent that society was opened up again. Basic measures remained such as hand hygiene, coughing in the elbow and physical distancing.

The survey was sent to 2,611 participants of a pre-existing research panel known as the Nursing Staff Panel. The Nursing Staff Panel is a nationwide, representative group of nursing staff who deliver

direct nursing care to patients in various healthcare settings. Registered nurses, certified nursing assistants, social workers, primary care practice nurses, and nurse specialists participate in the Nursing Staff Panel. Note that in the Netherlands, primary care nurses are not always educated as a nurse. Some primary care nurses were first nursing assistants and received additional training to be able to work as a primary care nurse. The respondents were working in hospitals, mental health care, care for people with an intellectual disability, home care, nursing home care, and general practices. Recruitment procedures have been described elsewhere [10, 11].

Measurements

Perceived resilience was assessed with the Employee Resilience Scale (EmpRes) [12]. This questionnaire aims to map the resilience and adaptability of employees. Resilience and adaptability are qualities that help employees to deal with continuously changing and complex circumstances and to respond appropriately. The EmpRes consists of 9 items that can be answered with a 5-point Likert scale (1 = (almost) never to 5 = (almost) always). An example item is: "I learn from mistakes at work and improve the way I do my work." Together they form one dimension "employee resilience." A higher mean score for the EmpRes means higher employee resilience (Cronbach's alpha = 0.88).

Patient safety was measured by dimension 11 of the Hospital Survey on Patient Safety Culture (HSOPSC), concerning overall perceptions of patient safety [13]. This dimension consists of four questions that are answered with a 5-point Likert scale (1 = disagree strongly/never to 5 = agree completely/always). An example item is: "Patient safety is never sacrificed to get more work done."

Additionally, the survey included 24 self-developed questions regarding patient safety during the COVID-19 pandemic in which we looked at safety and quality of care aspects. These questions could be answered on a 5-point Likert scale (1 = disagree strongly/worsened a lot to 5 = agree completely/improved a lot). Example questions are: "I flexibly handle unexpected situations," "Due to the COVID-19 pandemic, attention for hand hygiene (worsened/improved)," and "Due to the COVID-19 pandemic, working according to protocols (worsened/improved)."

At the end of the survey, we added demographic questions on age, sex, working hours, whether or not participants suffered from a COVID-19 infection and whether or not participants had direct contact to COVID-19 patients.

Data Analysis

The data were analyzed by means of descriptive statistics, t-tests, ANOVA, and Spearman correlation in STATA 15.0. To distinguish between care providers who are higher versus lower in resilience, a cut-off score of >3 was used. Participants that were categorized as higher in resilience answered the EmpRes questions on average with "often" and "always" on the 5-point-Likert scale. Negatively formulated questions or statements from the questionnaires were recoded. In this article, only significant differences at an alpha level of $p < 0.05$ are reported.

Results

Participant Characteristics

Eight hundred eighty-four participants completed the survey (33% response). All participant characteristics are presented in Table 1. Most participants in this study were nurses (54%). In the Netherlands, nurses, nursing assistants, social workers, primary care practice nurses, and nurse specialists are different professions, but may all take part in the nursing panel. Ninety percent of the participants were female and the average age was 51 years (SD = 10.7). Fifty-six percent of the participants had worked with patients suffering a COVID-19 infection and 23% of the participants believed that they had suffered a COVID-19 infection themselves.

[Table 1]

Perceived Resilience Moderated by Demographics

In general, the participating nursing staff professionals perceived on average to be regularly or often resilient during their work (EmPres scale average score 3.85 (SD = 0.75)), see Figure 1. In terms of profession, nurses (M = 3.94; SD = 0.69) and nurse specialists (M = 4.29; SD = 0.58) scored higher on perceived resilience compared to nursing assistants (M = 3.55; SD = 0.85). Nursing staff professionals who provided care to patients with a COVID-19 infection (M = 3.92; SD = 0.04 versus M = 3.72; SD = 0.06) or who had suffered from a COVID-19 infection themselves (M = 4.00; SD = 0.06 versus M = 3.79; SD = 0.04) also scored significantly higher. Nursing staff professionals with a higher education (bachelor degree and higher) (M = 4.01; SD = 0.04 versus M = 3.71; SD = 0.04) or those who worked ≥ 16 hours a week (M = 3.83; SD = 0.73 and M = 3.94; SD = 0.75 versus M = 3.54; SD = 0.80) scored higher on perceived resilience. Lastly, nursing staff aged ≥ 56 years scored lower on perceived resilience compared to the younger nursing staff (M = 4.06; SD = 0.69 and M = 3.96; SD = 0.72 and M = 3.93; SD = 0.73 versus M = 3.71; SD = 0.76).

[Figure 1]

Patient Safety Moderated by Demographics

The participating nursing staff professionals reported on average to be quite positive about patient safety (mean score HSOPSC dimension = 3.67 (SD = 0.67)), see Figure 2. There were differences in perceived patient safety between nursing staff in terms of their profession, see Figure 3.

[Figure 2]

[Figure 3]

Primary care practice nurses experienced patient safety to be significantly higher compared to nurses, nursing assistants, and social workers (M = 3.90; SD = 0.64 versus M = 3.65; SD = 0.69 and M = 3.62; SD = 0.61 and M = 3.55; SD = 0.67). Also, nursing staff professionals with a higher education scored higher (bachelor's degree and higher) on perceived patient safety compared to lower educated (postsecondary vocational training) nursing staff professionals (M = 3.75; SD = 0.04 versus M = 3.60; SD = 0.03).

Individual Differences in Resilience Moderated by Patient Safety

Individual differences in resilience were assessed with a cut-off score dividing the participants in higher versus lower perceived resilience (cut-off score EmpRes > 3). No significant differences were found between nursing staff professionals with higher versus lower perceived resilience with regards to their perception of patient safety, based on HSOPSC dimension 11 (M = 3.56; SD = 0.07 versus M = 3.69; SD = 0.03, $p = 0.13$).

With respect to patient safety during the COVID-19 pandemic, based on the 24 self-developed questions, the nursing staff professionals who perceived higher resilience reported to be more often flexible in unexpected situations (M = 3.35; SD = 0.04 versus M = 3.08; SD = 0.09), to experience more often unexpected situations (M = 3.51; SD = 0.04 versus M = 3.14; SD = 0.10) and to feel more solidarity with colleagues from other teams (M = 3.31; SD = 0.05 versus M = 3.06; SD = 0.10). Furthermore, they believed that the focus on hand hygiene (M = 3.54; SD = 0.03 versus M = 4.33; SD = 0.10) and working according to protocols and guidelines (M = 3.75; SD = 0.04 versus M = 3.51; SD = 0.09) improved due to the COVID-19 pandemic.

Discussion

In the present study, nursing staff professionals considered themselves resilient with a positive perception on patient safety in their organization. Moderating factors on resilience were the nursing staff education, age, part-time employment, experience with treating patients with a COVID-19 infection, and having suffered from a COVID-19 infection themselves. Nursing staff who perceived higher resilience reported to be more often flexible, to face more often unexpected situations and to feel more solidarity with colleagues from other teams. They also believed that the focus on hand hygiene and working according to protocols and guidelines improved during the COVID-19 pandemic.

Baskin and Bartlett (2021) describe in an integrative review that, on average, nurses and healthcare workers exhibited moderate levels of resilience during the COVID-19 pandemic [3]. Our results show a more positive pattern such that the participating nursing staff considered themselves on average as very resilient during their work. Nursing staff who scored highest on resilience indicated to handle the COVID-19 crisis better than nurses who scored lower on resilience. These findings are in line with the earlier conclusions that resilient healthcare professionals handle the COVID-19 pandemic-related pressures better. Our findings thus support the notion that building resilience in healthcare professionals can serve as a protective factor against negative job-related outcomes and consequently may improve patient outcomes [3]. Possible ways to strengthen resilience in healthcare professionals are to provide better emotional support, mental health education and training, and adequate safety and security measures [14].

Regarding the overall perception of patient safety as measured with HSOPSC dimension 11, our results are not in line with recent overview studies [15]. According to Granel-Giménez and colleagues, the perception of patient safety among nurses working in hospitals in Hungary, Spain, Croatia, and Sweden is adequate or even poor [15]. Heterogeneity between countries on the HSOPSC patient safety culture dimensions were also found in a recent study among OECD countries [16]. The differences between countries were in both studies attributed to national culture or variability in health system structures. However, this conclusion was drawn on all existing dimensions of the HSOPSC questionnaire. The great variability in findings across countries shows the importance of assessing and monitoring patient safety culture on the country level. The current study contributes to these efforts

Strengths and Limitations

A strength of this study is that we used a national representative group of nursing staff in a variety of healthcare sectors. This enabled us to study the relationships of resilience with educational level, age, sex, and type of nursing profession. A limitation of this study is that the measurements were conducted at one point in time making it difficult to interpret causality between resilience and patient safety.

Conclusions

After the third wave of COVID-19, Dutch nursing staff professionals perceived themselves as resilient and reported to have a positive perception of patient safety within their organization. This pandemic will probably not be the last unexpected health crisis that healthcare professionals have to deal with. By using individual resilience of healthcare professionals to optimize resilience on the organizational level, we believe that the healthcare system will benefit to safeguard the quality and safety of health care in the future.

Acknowledgement and disclosures

Acknowledgment

We would like to thank the participants of the Dutch Nursing Staff Panel who participated in this study.

Ethics Approval and Consent to Participate

The study was conducted in compliance with the principles of the General Data Protection Regulation, by strictly safeguarding the anonymity of the participants. Formal approval from an ethics committee was not required under the applicable Dutch legislation on medical scientific research as participants were not subjected to procedures and were not required to follow rules of behavior (see <https://english.ccmo.nl/investigators/legal-framework-for-medical-scientific-research/your-research-is-it-subject-to-the-wmo-or-not>). Participants in the survey had all consented to being sent and completing surveys on a regular basis on topics directly related to their work when they signed up as members of the Nursing Staff Panel.

Authors' Contributions

All authors made substantial contributions to the conception and design of the study and acquisition, analysis, and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; and agreed to be accountable for all aspects of the work.

Competing Interests

The authors declare that they have no competing interests.

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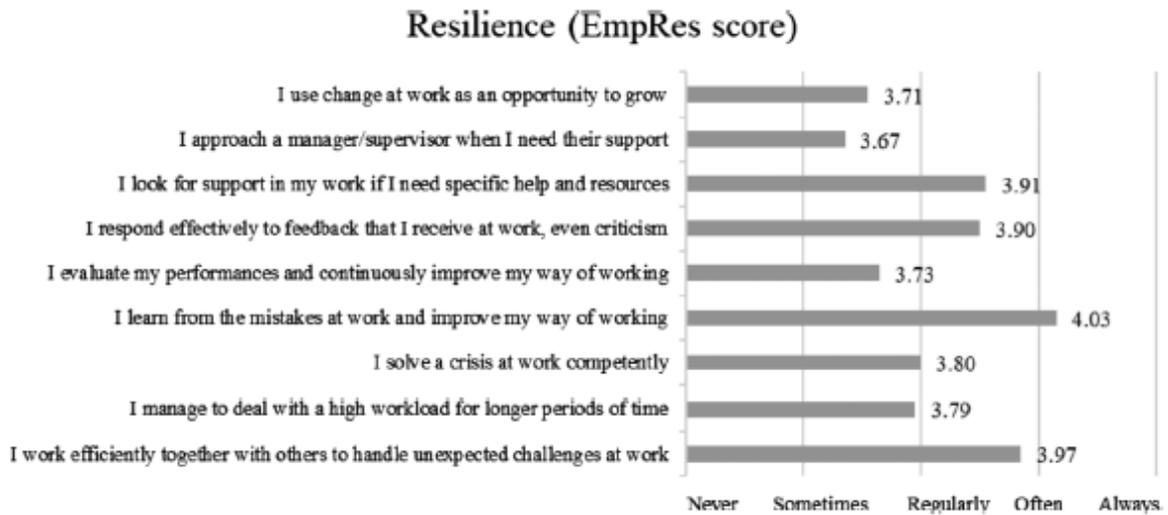
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Tables and figures

Table 1. Participant characteristics

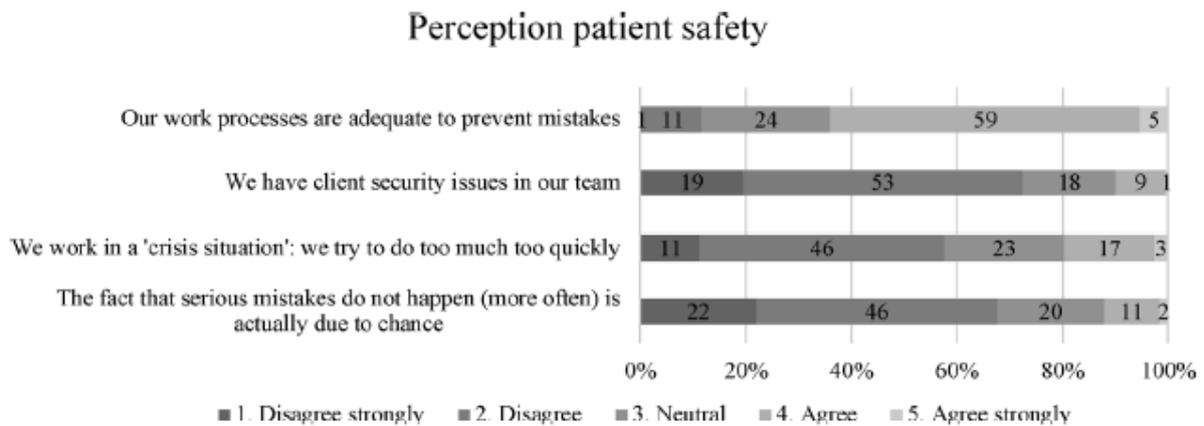
Participant characteristics	<i>n</i>	%
Sex		
Male	83	10%
Female	761	90%
Age		
≤35 years	102	12%
36–45 years	113	13%
46–55 years	255	30%
≥56 years	374	44%
Education		
Post-secondary vocational training	459	54%
Bachelor's degree and higher	385	46%
Hours worked per week (<i>n</i> = 838; average = 26,7; <i>SD</i> = 6,6)		
≤16 hours	78	9%
between 16 and 32 hours	468	55%
≥32 hours	290	34%
Healthcare setting		
Hospital	137	16%
Mental health care	78	9%
Care for people with an intellectual disability	114	14%
Home care	218	26%
Inpatient geriatric care	173	20%
General practice	124	15%
Healthcare profession		
Nurse	453	54%
Nursing assistant	159	19%
Social worker	97	11%
Primary care practice nurse	116	14%
Nurse specialist	19	2%
Participant characteristics	<i>n</i>	%
Did you provide care to patients with a COVID-19 infection?¹		
Yes, incidental	253	30%
Yes, regularly	147	17%
Yes, I worked in a COVID-19 team or department	84	10%
No	219	26%
Missing	141	17%
Did you suffer from a COVID-19 infection?²		
Yes, confirmed with a test	132	16%
I think so	60	7%
No	517	61%
Missing	135	16%

Figure 1 Nursing staff resilience based on EmpRes questionnaire (N = 741-755*)



* Some participants did not answer all questions of the EmpRes questionnaire; therefore the N varies.

Figure 2. Nursing staff's perception of patient safety based on dimension 11 of the HSPSC questionnaire (N = 787-805*)



* Some participants did not answer all questions of dimension 11 of the HSPSC questionnaire; therefore the N varies.

Figure 3. The percentage of nursing staff with a very negative to very positive perception of patient safety based on dimension 11 of the HSPSC questionnaire per healthcare profession (N = 757)