

Effects of Decent Work on Nurses' Grit and Interprofessional Teamness: A Cross-Sectional Study during the COVID-19 Pandemic

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Abstract

Background: The COVID-19 pandemic has presented unprecedented challenges in the working conditions of healthcare settings. Therefore, identifying the influence of working conditions, particularly in terms of decent work, on nurses' grit and interprofessional teamness during the pandemic is crucial. **Aim:** This study aimed to test the effect of nurses' experience of decent work on their levels of grit and interprofessional teamness during the COVID-19 pandemic. **Methods:** This is a descriptive, cross-sectional, and correlational study among all ward nurses (N = 246) at Damanhour Chest Hospital, an isolation hospital in El Beheira, Egypt. Data were collected using a Personal Information Form, the Decent Work Scale, the Grit Scale, and the Interprofessional Teamness Scale. The data were analyzed using descriptive statistics, the independent t-test, analysis of variance, Pearson correlation, and multiple linear regression. **Results:** The experience of decent work had a positive correlation with nurses' grit ($r = 0.69$, $p < 0.001$) and interprofessional teamness ($r = 0.58$, $p < 0.001$). In addition, nurses' grit had a positive correlation with interprofessional teamness ($r = 0.55$, $p < 0.001$). The multiple linear regression analysis revealed that age, marital status, education, and experience of decent work accounted for 53.6% of the variance in nurses' grit. Moreover, education, experience of decent work, and grit accounted for 38.5% of the variance in interprofessional teamness among nurses during the COVID-19 pandemic. **Conclusion:** The study emphasizes the significance of decent work in enhancing the grit and interprofessional teamness of nurses during the COVID-19 pandemic. **Recommendation:** Nurse administrators should apply measures to improve working conditions, particularly during crisis periods, to enhance nurses' experience of decent work, as a way to enhance their grit and interprofessional teamness.

Keywords: Decent work, Grit, Interprofessional teamness, Nurses.

Introduction

The COVID-19 pandemic has created a serious impact on healthcare organizations globally, affecting working conditions for healthcare professionals (Loewenson, 2021). Since its emergence in Wuhan, China in December 2019, the pandemic has put immense pressure on healthcare systems, with over 62 million confirmed cases and 1.46 million documented deaths as of December 1, 2020 (Hui et al., 2020). Nurses, being at the forefront of the pandemic response, have faced a myriad of challenges, including insecurity, concerns about family health, increased workloads, long and irregular hours, heightened risk of infection, lack of protective equipment, retrenchment of social protection, social stigma, and wage stagnation (Santos et al., 2021). One of the most critical efforts of health

organizations to combat this degradation of work conditions and its effects on nurses is to promote decent work conditions (International Labour Organization, 2020).

The concept of decent work refers to working conditions that provide workplace security, fair income, social protection for families, opportunities for personal development and social integration, freedom for individuals to express their concerns, participate in decision-making affecting their lives, and equality of opportunity and treatment for all, regardless of gender (International Labour Organization, 2019; Xu et al., 2022). The term "decent work" was conceptualized under five themes: physically and interpersonally safe working conditions, access to healthcare, adequate compensation, hours that allow for free time and rest, and organizational

values that complement family and social values (Duffy et al., 2017).

Securing decent work is a crucial factor in promoting the physical and mental well-being of nurses (Duffy et al., 2019). Decent work also addresses three fundamental human needs: (1) survival needs, (2) social connection needs, and (3) self-determination needs (Dodd et al., 2019). Furthermore, it plays an important role in fostering autonomous work motivation, making a significant contribution to promoting work engagement and preventing burnout (Ferraro et al., 2020). Access to decent work can lead to job satisfaction, a sense of purpose, job engagement, and passion in achieving work goals, as well as the ability to persevere in the face of obstacles (Di Fabio & Kenny, 2019), which is referred to as “grit”.

Grit is a relatively new construct in the nursing profession (Terry & Peck, 2020) and is now considered an essential trait for nurses during disasters, as it can determine their performance (Tyer-Viola, 2019). Grit motivates nurses to endure challenges and achieve success over time. It is defined as perseverance and passion for long-term goals, regardless of adversity or challenge (Schimschal et al., 2020), comprising two factors: passion, which refers to sustained interest over a long period of time, and perseverance, which is the ability to overcome adversity through hard work (Duckworth & Quinn, 2009).

Grit can provide insight into why some nurses succeed in combating crises or clinical challenges while others do not (Terry & Peck, 2020). Gritty nurses tend to have a higher sense of achievement, success, commitment to lifelong learning, wellbeing, career satisfaction, personal accomplishment, and reduced feelings of burnout. They demonstrate resilience in the face of failure while also maintaining deep commitments that they remain loyal to over many years. A sense of competence and excellence correlates with fewer absences, decreased risk of turnover, and increased ability to handle the demands of the job (Seguin, 2019).

Nurses are the heart and hands of healthcare setting in the battle against the Covid-19 pandemic (Kennedy, 2021). To achieve success in their fight against the pandemic, they must work as an effective team with core interrelated qualities (Jassar et al., 2021), termed as interprofessional teamness (Tilden et al., 2016). Interprofessional teamness refers to a set of interconnected qualities that allow team members to effectively support each other's roles, share a common team identity, and collaborate in

meeting the health-related needs of patients (Al Sabei et al., 2021).

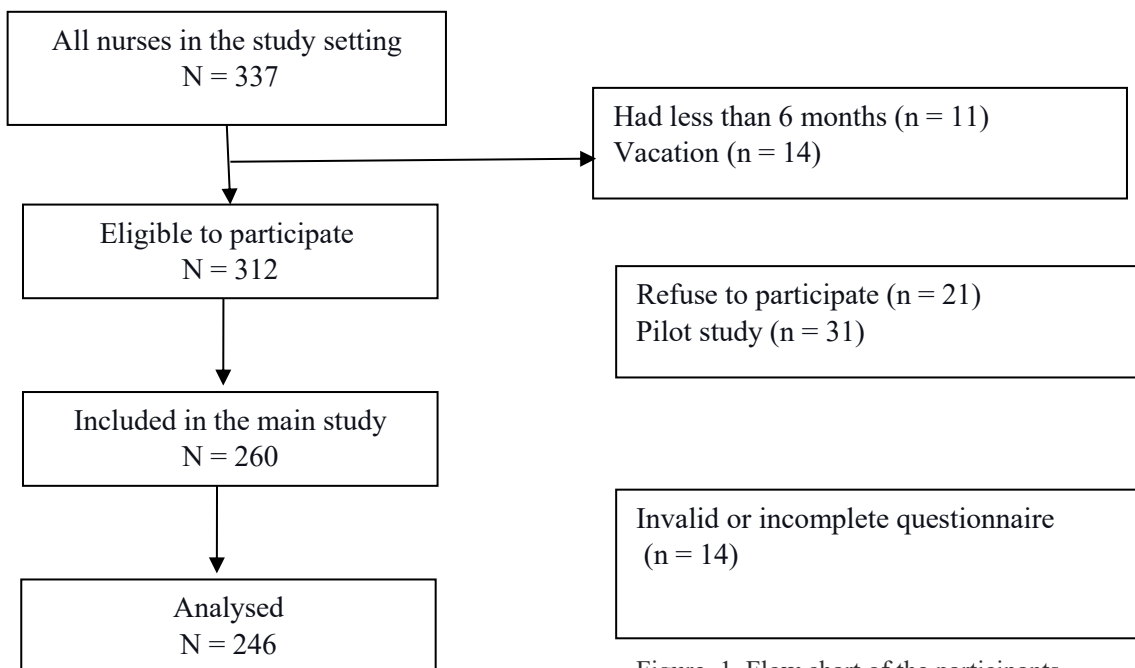
The development of interprofessional teamness within a healthcare team necessitates specific interrelated characteristics, such as effective communication, clear role delineation, mutual trust among team members, shared goals prioritizing patient and family needs, and organizational support to promote successful teamwork (Tilden et al., 2016). Interprofessional teamness is critical for improving patient outcomes, leading to higher patient safety, satisfaction, and reduced occurrences of medication errors and adverse events (Al Sabei et al., 2021). Additionally, nurses who work within an interprofessional team environment experience lower levels of burnout, higher job satisfaction, and improved clinical decision-making abilities (Eckstrom et al., 2020).

Significance of the study

The 2020 State of the World's Nursing Report signifies the crucial role of nurses in combating the COVID-19 pandemic, with frontline nurses comprising 59% of the healthcare workforce and being essential in preventing healthcare system collapse during pandemics (World Health Organization, 2020). Therefore, investing in nursing is critical for healthcare organizations (Kennedy, 2021), and securing decent work conditions is a key way to invest in nursing (International Labour Organization, 2020). In fact, nurses can provide quality services only if their work environment supports them with decent conditions (Llop-Gironés et al., 2021). Additionally, decent work is a basic workplace condition and is one of the 17 Sustainable Development Goals to be achieved by 2030 (Goal 8; World Health Organization, 2020). However, no study has measured the extent of the deficit of decent work conditions due to the COVID-19 pandemic (Ferraro et al., 2020). Hence, this study aims to fill this knowledge gap by identifying the extent to which nurses have experienced decent work during the COVID-19 pandemic.

Furthermore, the emergence of the COVID-19 pandemic has created an unprecedented demand for nursing care worldwide (El-Monshed et al., 2022; Kennedy, 2021). However, paradoxically, this demand has been accompanied by a decrease in nursing grit (Lopez et al., 2021) and inter-professional teamwork (Htay et al., 2021) due to fear of infection, tensions from increased mortality among nursing staff, and concerns about the well-being of their families (Häussl et al., 2021). Therefore, there is a pressing need to explore the factors that can increase nursing grit

and teamness during this challenging time (Huffman et al., 2021). Identifying such factors can help healthcare organizations develop effective interventions to promote nurses' grit and interprofessional teamness, ultimately leading to better patient outcomes. Thus, the aim of this study is to test the effect of nurses' experience of decent work on their levels of grit and interprofessional teamness during the COVID-19 pandemic.



Subjects and methods

Study design

The present study was designed as a descriptive, cross-sectional, and correlational study.

Study setting

Data for this study were collected from Damanhour Chest Hospital, which is an isolated hospital located in El Beheira, Egypt. The hospital is affiliated with the Ministry of Health

Figure. 1. Flow chart of the participants.

Aim

This study aimed to examine the effect of decent work on nurses' grit and interprofessional teamness during the COVID-19 pandemic.

Research questions:

- 1- What is the extent to which nurses have experienced decent work during the COVID-19 pandemic?
- 2- What is the level of grit exhibited by nurses during the COVID-19 pandemic?
- 3- What is the level of interprofessional teamwork among nurses during the COVID-19 pandemic?
- 4- Are securing decent work conditions affect the levels of grit and interprofessional teamwork among nurses during the COVID-19 pandemic?
- 5- Are there differences in the demographic characteristics of nurses, their experiences of decent work, levels of grit, and interprofessional teamwork during the COVID-19 pandemic?

and Population and was responsible for providing care to COVID-19 patients in Damanhour during the pandemic. It has a total capacity of 94 beds and employs 337 nurses. The hospital comprises various units, including an Intensive Care Unit, inpatient units, endoscopy unit, emergency unit, and outpatient units.

Participants

The statistical population for this study consists of all ward nurses employed in the mentioned hospital who met the inclusion criteria of being licensed nurses with at least six months of experience in the hospital and who agreed to participate in the study. Nurses who were on internship, vacation, or declined to participate were excluded. All eligible nurses were invited to take part in the study, resulting in a total eligible population of 312 nurses. Of these, 31 nurses participated in the pilot study. Among the remaining 281 nurses, 260 completed and responded to the study questionnaires. However, 14 nurses were excluded from the analysis due to incomplete or invalid answers. Thus, the final

sample size for the study was 246 nurses, representing an 87.5% response rate (Figure 1).

Instruments

The study used the Personal Information Form, as well as three English self-report scales: the Decent Work Scale, the Grit Scale and the Interprofessional Teamness Scale, and adapted them for use in an Arabic context using the five steps of Self-Report Measures translation (Beaton et al., 2000). Firstly, two English professors separately translated the English scales into Arabic. Secondly, the two translators and the first author consolidated the discrepancies to create an initial Arabic draft. Thirdly, The second author back-translated the Arabic draft into English. Fourthly, a committee of five experts consisting of two nursing administration professors and three nurses, including one deputy nursing director and two ward nurses with a master's degree in nursing administration, reviewed the translated and back-translated versions of the scales and compared them with the original scales to produce a consolidated Arabic version. Finally, the Arabic version of the scales was tested with 31 nurses to ensure that they were feasible and easy to understand.

Personal Information Form

The Personal Information Form focused on six questions about the sociodemographic characteristics of the nurses. These included their age, gender, marital status, educational degree, years of professional experience, and years of employment in the current hospital.

The Decent Work Scale (DWS)

The DWS, developed by Duffy et al. (2017), was employed to assess the extent to which nurses experience decent working conditions. The DWS consists of 15 items in five dimensions: (a) physically and interpersonally safe working conditions, (b) access to healthcare, (c) adequate compensation, (d) hours that allow for free time and rest, and (e) organizational values that complement family and social values. Each dimension contains three items. A sample item is "I feel emotionally safe interacting with people at work." All items were rated on a 7-point Likert scale ranging from 1 = strongly disagree, to 7 = strongly agree. The scale includes four reverse-scored items, which are coded in reverse. To obtain the overall score for the DWS, the scores for each dimension were averaged, and the average score of the five dimensions was calculated. The possible overall score ranged from 15 to 105, with a higher score indicating greater agreement among nurses that work conditions are decent. The reliability coefficient

of the scale in its original version was 0.86, and in this study, it was 0.94.

Grit Scale

The Grit Scale, developed by Duckworth et al. (2007), was utilized to quantify the level of grit displayed by nurses in their work. The scale comprises 12 items that are categorized into two dimensions: (a) consistency of interest and (b) perseverance of effort, with six items in each dimension. A sample item is "I have overcome setbacks to conquer an important challenge." All items were rated on a 5-point Likert scale, ranging from 1 = not at all like me to 5 = very much like me. The scale includes six negatively worded items, which were reverse-scored. The scores of the two dimensions were summed to create an overall grit score for nurses, which ranged from 12 to 60. A higher score on the scale indicates a greater degree of grit among nurses. The reliability coefficient of the scale in its original version was 0.85, and in this study, it was 0.98.

Interprofessional Teamness Scale

The Interprofessional Teamness Scale, developed by Tilden et al. (2016), was used to evaluate the degree of interprofessional teamness among nurses. The scale comprises 15 items of one dimension. A sample item is "Team members contribute to setting and evaluating goals for improving the practice." All items were rated on a 4-point Likert scale, ranging from 1 = strongly disagree to 4 = strongly agree. The scale includes three reverse-scored items, which were coded in reverse. The average score of the 15 items was calculated to obtain the overall score for the interprofessional teamness among nurses, which ranged from 15 to 60. Higher scores indicate a strong adherence to interprofessional teamness among nurses. The reliability coefficient of the scale in its original version was 0.92, and in this study, it was 0.96.

Pilot study

A pilot study was conducted on 31 nurses who were not part of the study. The primary objective of the pilot study was to evaluate the clarity of the questionnaire items and to assess the amount of time required to complete the questionnaire. Based on the feedback received from the participants, minor adjustments were made to the layout and content of the questionnaire to improve their clarity and ease of completion. The average time to complete the questionnaire was found to be 10 minutes.

Data collection

The study's data collection period spanned from July 1st, 2021 to August 31st, 2021. Prior to

commencing data collection, the research team contacted the hospital administrators to explain the purpose, significance, and methodology of the study, and to seek their consent and cooperation. Subsequently, the third author disseminated a hard copy of the questionnaire to nurses during their break time in their respective units. The questionnaire was accompanied by an information sheet and a pre-addressed postal envelope. Participants were instructed to complete the questionnaire at their own convenience within two weeks, put the completed questionnaire in the provided envelope, and return it to the researcher.

Statistical analysis

The statistical analysis was performed using SPSS version 24 (IBM Corp.; Chicago, IL, USA). The demographic data were summarized using standard descriptive statistics, including counts with percentages. The participants' responses to decent work, grit, and interprofessional teamness were presented using mean scores and standard deviations. The validity and reliability of the study scales were confirmed. Confirmatory factor analysis (CFA) was conducted using AMOS. To compare the general characteristics of the participants and the scores of experienced decent work, grit, and interprofessional teamness, t-tests and one-way analysis of variance were used, followed by post-hoc Tukeys' HSD tests for pairwise comparisons where appropriate. The correlation between the study variables was analyzed using Pearson correlation coefficients. Based on the correlation analysis and the significant differences results, multiple regression analyses were established with variables that displayed a significant relationship. The absence of multicollinearity was verified, as indicated by the tolerance and variance inflation factor. A 5% level of significance was set for all statistical tests.

Ethical consideration

Ethics approval was attained from Research Ethics Committee of the Faculty of Nursing, Damanhour University, Egypt. The study adhered to Declaration of Helsinki guidelines and regulations. All participants were given a verbal explanation of the study's purpose, procedures, and expected outcomes. A participant information sheet was attached to the questionnaire to provide a detailed explanation of the research study. Participants were informed that participation was purely voluntary, and they were reminded not to include any identifiers on the questionnaire to maintain anonymity. To ensure confidentiality,

completed questionnaires were stored in a locked cabinet that was only accessible to the researchers.

Results

Out of the nurses who participated ($n = 246$), less than half ($n = 106$, 43.1%) were under the age of 30. Consistent with the demographics of the nursing profession, the majority of participants were female ($n = 167$, 67.9%). The bulk of the participants were married ($n = 145$, 58.9%) and held an associate degree in nursing ($n = 138$, 56.1%). Slightly over half of the participants ($n = 136$, 55.3%) had more than ten years of nursing experience, while slightly less than three-quarters ($n = 192$, 78.0%) had ten or less years of experience in a hospital setting (Table 1).

Table 1 also displays differences in participants' experience of decent work, grit, and teamness during the Covid-19 based on their characteristics. The results indicate that nurses who held a diploma or associate degree reported that their working conditions were decent during the pandemic compared to those who held a bachelor's degree ($F = 4.85$, $p = 0.003$). Additionally, nurses with ten or fewer years of experience in the nursing profession reported more decent working conditions than those with more than ten years ($t=2.09$, $p=0.03$).

Regarding nurses' grit, there were significant differences based on age, marital status, and educational level. Specifically, a one-way ANOVA with a post hoc comparison test indicated that nurses under 30 years of age had significantly higher grit to work during COVID-19 than either those aged between 30 and 40 years or those aged over 40 years ($F = 7.05$, $p = 0.001$). Additionally, single nurses had significantly higher grit to work during COVID-19 than married and divorced nurses, and married nurses showed higher grit than divorced nurses. However, there was no significant difference between widow nurses and other categories of marital status ($F = 8.18$, $p = 0.001$). Moreover, nurses with an associate degree showed higher grit during the Covid-19 pandemic than those with a bachelor's degree ($F = 9.88$, $p = 0.001$). Finally, with regard to interprofessional teamness, nurses who held a diploma or associate degree reported a higher sense of working in an interprofessional team during the COVID-19 outbreak than those with a bachelor's degree ($F = 8.21$, $p = 0.001$).

Table 1: Participants' demographics and differences in their experience of decent work, grit, and teamness (N = 246)

Variable	Category	No. (%)	Decent work		Grit		Teamness	
			M(SD)	t/F (P)	M (SD)	t/F (P)	M (SD)	t/F (P)
Age (years)	<30 ^a	106 (43.1)	48.64 (11.39)	0.26 (0.77)	41.66 (10.79)	7.05 (0.001) a > b, c	46.69 (11.19)	2.55 (0.80)
	30–40 ^b	88 (35.8)	49.50 (12.81)		35.19 (14.23)		43.60 (10.94)	
	>40 ^c	52 (21.1)	48.02 (12.39)		35.40 (13.94)		43.08 (12.30)	
Gender	Male	79 (32.1)	47.62 (12.87)	-1.07 (0.29)	40.04 (13.08)	1.67 (0.09)	44.07 (12.66)	-0.71 (0.48)
	Female	167 (67.9)	49.38 (11.70)		37.07 (13.07)		45.18 (10.79)	
Marital status	Single	81 (32.9)	50.62 (11.17)	1.79 (0.15)	43.09 (11.03)	8.18 (0.001) a > b, c; b > c	47.39 (11.33)	2.15 (0.09)
	Married	145 (58.9)	48.47 (12.32)		36.19 (13.42)		43.72 (11.23)	
	Divorced	11 (4.5)	45.36 (13.39)		27.55 (13.13)		42.36 (11.29)	
	Widowed	9 (3.7)	42.44 (13.43)		34.67 (10.77)		42.44 (13.13)	
Education	Diploma ^a	69 (28.0)	50.19 (12.72)	4.85 (0.003) a, b > c	33.78 (14.24)	9.88 (0.001) b > c	45.11 (10.47)	8.21 (0.001) a, b > c
	Associate ^b	138 (56.1)	49.84 (11.301)		41.69 (10.70)		46.82 (10.41)	
	Bachelor ^c	31 (12.6)	41.29 (10.02)		31.06 (14.89)		36.23 (13.64)	
	Master ^d	8 (3.3)	48.50 (17.98)		38.12 (14.23)		40.12 (12.78)	
Years in nursing	≤10	110 (44.7)	50.60 (11.07)	2.09 (0.03)	36.24 (13.53)	-1.64 (0.57)	46.32 (9.34)	1.85 (0.56)
	>10	136 (55.3)	47.38 (12.72)		39.46 (12.65)		43.61 (12.77)	
Years in hospital	≤10	192 (78.0)	48.23 (12.43)	-1.43 (0.155)	37.82 (13.24)	-0.45 (0.66)	44.59 (11.85)	-0.60 (0.51)
	>10	54 (22.0)	50.89 (10.66)		38.72 (12.81)		45.65 (9.76)	

Note. Age, marital status, and education were analyzed using a one-way analysis of variance; gender, years in nursing, and years in the hospital were analyzed using independent sample t-tests.

^{abc} Differences between the means by Tukeys' HSD post hoc test.

Instrument validity and reliability

The current study evaluated the validity of the scales in terms of face, content, and construct validity. Face and content validity were ensured by consulting a panel of experts consisting of five individuals with expertise in nursing academics, nursing practice, and scale development. The experts were asked to comment on whether the study scales appeared to measure what they were supposed to measure to ensure face validity. They were also asked to evaluate content validity by rating all items on a 4-point Likert scale (1 = not relevant, 4 = highly relevant). If the item-level CVI (I-CVI) was ≥ 0.78 and the scale-level CVI/average (S-CVI/Ave) ≥ 0.90 , the content validity of the scale was considered satisfactory (Polit & Beck, 2010). The expert panel affirmed the face and content validity, with I-CVI ranging from 0.94 to 1.00 for the decent work scale, 0.96 to 1.00 for the grit scale, and 0.93 to 1.00 for the interprofessional teamness scale. The S-CVI/Ave was 0.95 for the decent work scale, 0.96 for the

grit scale, and 0.98 for the interprofessional teamness scale, indicating acceptable content validity.

To confirm construct validity, the study utilized confirmatory factor analysis (CFA). Prior to conducting CFA, sample adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) test and the Bartlett Test of Sphericity. The KMO and Bartlett Test of Sphericity values were 0.934 ($P < 0.001$) for the decent work scale, 0.965 ($P < 0.001$) for the grit scale, and 0.944 ($P < 0.001$) for the interprofessional teamness scale, indicating adequate sample size for CFA. The factor loading for all items of each scale exceeded the minimum acceptable level of 0.7 as proposed by Nunnally (1978). Moreover, the goodness-of-fit statistics for all scale models met the satisfactory criteria (Table 2). A good model fit is indicated by a χ^2/df value below 3, IFI, TLI, and CFI values above 0.90, and an RMSEA value below 0.08 (Bentler & Chou, 1987).

Reliability was assessed in terms of Cronbach's alpha coefficients for each scale and its dimensions, which were above the accepted threshold of 0.7 (Nunnally, 1978; Table 2).

Descriptive statistics for the studied variables

Table 2 depicts descriptive statistics for the studied variables. The mean overall score for participants' experience of decent work during the COVID-19 pandemic was 48.82 (SD = 12.09) which scored below the midpoint, indicating a low level of decent work conditions during COVID-19 pandemic. The subscale scores ranged from 8.39 (SD = 2.63) for safe working conditions to 10.21 (SD = 3.03) for access to healthcare.

The mean score of participants' grit during Covid-19 pandemic was 38.02 (SD = 13.12), which slightly above the midpoint of grit score, demonstrating a moderate level of participants' grit during Covid-19 pandemic. Among the two dimensions of the grit scale, the mean score for consistency of interest (19.33, SD = 6.66) was slightly higher than that of perseverance of effort (18.77, SD = 6.60). The mean score of interprofessional teamness among participants during Covid-19 pandemic was 44.83 (SD = 11.41), which was considered within a moderate range.

Table 2: Validity, reliability, and descriptive statistics for the studied variables (N = 246)

Variable	α	Factor loading	Goodness-of-fit	Min.-Max.	Mean (SD)
Decent work	0.94	0.73-0.94	$\chi^2/df = 1.83$; IFI = 0.96; TLI = 0.93; CFI = 0.95	15-85	48.82 (12.09)
• Safe working conditions	0.79	0.73-0.81		3-16	8.39 (2.63)
• Access to healthcare	0.91	0.84-0.92		3-19	10.21 (3.03)
• Adequate compensation	0.87	0.79-0.87		3-17	10.19 (3.06)
• Free time and rest	0.90	0.89-0.94		3-18	10.12 (3.01)
• Complementary values	0.82	0.75-0.89		3-17	9.89 (2.73)
Grit	0.98	0.87-0.93	$\chi^2/df = 2.23$; IFI = 0.94; TLI = 0.94; CFI = 0.93	15-60	38.02 (13.12)
• Consistency of interest	0.96	0.87-0.91		5-30	19.33 (6.66)
• Perseverance of effort	0.97	0.89-0.93		5-30	18.77 (6.60)
Interprofessional teamness	0.96	0.88-0.94	$\chi^2/df = 2.35$; IFI = 0.96; TLI = 0.95; CFI = 0.96	15-60	44.83 (11.41)

Correlations between decent work, nurses grit and interprofessional teamness

According to the results of the Pearson correlation coefficient (Table 3), a significant positive correlation was observed between the overall score for decent work and the overall score for grit ($r = 0.69$, $p < 0.001$). There was also a significant positive correlation between the overall score for decent work and the score for

interprofessional teamness ($r = 0.58$, $p < 0.001$). Furthermore, a significant positive correlation was found between the score for grit and the score for interprofessional teamness ($r = 0.55$, $p < 0.001$).

Table 3: Correlations between decent work, grit and interprofessional teamness scores (N = 246)

Variable	Grit			Interprofessional teamness
	Consistency of interest r (p)	Perseverance of effort r (p)	Overall grit r (p)	
Decent work	0.68***	0.67***	0.69***	0.58***
Safe working conditions	0.24***	0.26***	0.26***	0.39***
Access to healthcare	0.64***	0.63***	0.65***	0.47***
Adequate compensation	0.64***	0.65***	0.65***	0.48***
Free time and rest	0.65***	0.65***	0.66***	0.55***
Complementary values	0.63***	0.60***	0.62***	0.52***
Interprofessional teamness	0.53***	0.54***	0.55***	1

Note. ***P < 0.001.

Multiple linear regression analysis

Multiple linear regression analysis was performed to examine the extent to which nurses' demographics and their experience of decent work during the COVID-19 pandemic predicted nurses' grit. The demographic variables that showed significant differences with nurses' grit, including age, marital status, and education, along with their experience of decent work, were entered as predictors, while nurses' grit was the dependent variable. The coefficient of determination (ΔR^2) value indicated that the given model accounted for 53.6% of the variance in nurses' grit during the COVID-19 pandemic (Table 4).

Table 5 presents the results of the multiple linear regression analysis examining the factors associated with interprofessional teamness among

nurses during the COVID-19 pandemic. Model 1 included education and decent work as predictors, while interprofessional teamness was the dependent variable. The coefficient of determination (ΔR^2) value showed that this model accounted for 33.5% of the variance in interprofessional teamness ($F = 62.54, P < 0.001$). In Model 2, nurses' grit was added to the model along with education and decent work. The regression analysis demonstrated an increase in ΔR^2 , accounting for 38.5% of the variance in interprofessional teamness ($F = 51.87, P < 0.001$). The inclusion of nurses' grit in the model resulted in a statistically significant improvement in the model's predictive power. Overall, the results suggest that nurses' grit, education, and decent work are important factors associated with interprofessional teamness during the COVID-19 pandemic.

Table 4. Multiple linear regression analysis of factors associated with nurses' grit (N = 246)

Factors	B	SE (B)	β	t	P value	95% CI
Age (Reference = less than 30)	-3.77	0.76	-0.22	-4.92	< 0.001	-5.284 to -2.264
Marital status (Reference = Married)	0.37	0.78	0.02	0.48	0.630	-1.166 to 1.922
Education (Reference = Associate)	3.14	0.80	0.17	3.92	< 0.001	1.563 to 4.721
Overall decent work	0.77	0.04	0.71	16.16	< 0.001	0.679 to 0.868
$R^2 = 0.543; \Delta R^2 = 0.536; F = 71, 64$						

Note: SE, standard error; β , standardized regression coefficient; 95% CI, 95% confidence interval.

Table 5. Multiple linear regression analysis of factors associated with interprofessional teamness among nurses (N = 246)

Factors	Model 1				Model 2			
	B	SE (B)	β	t	B	SE (B)	β	t
Education (Reference = Associate)	-1.41	0.82	-0.09	-1.70	-2.210	0.82	-0.02	-2.70
Overall decent work	0.53	0.05	0.56	10.67**	0.315	.068	0.334	4.66**
Overall grit					0.283	.063	0.321	4.52**
$R^2 = 0.341; \Delta R^2 = 0.335;$					$R^2 = 0.392; \Delta R^2 = 0.385;$			
$F = 62,54; P < 0.001$					$F = 51,87; P < 0.001$			

Note: SE, standard error; β , standardized regression coefficient; 95% CI, 95% confidence interval. ** $P < 0.01$.

Discussion

The COVID-19 pandemic has placed an enormous burden on nurses worldwide (Huffman et al., 2021), highlighting the need to examine the impact of such outbreaks. Therefore, the objective of this study is to test the effect of nurses' experience of decent work on their levels of grit and interprofessional teamness during the COVID-19 pandemic.

Experience of decent work and personal-related characteristics

The results showed that nurses in the present study experienced a low level of decent work conditions during COVID-19 pandemic. This can be attributed to the unpreparedness of healthcare organizations globally for such a crisis, resulting in a state of disarray, disorder, and significant disruptions in the work conditions of healthcare settings (Kennedy, 2021). Similar to this study, nurses in Taiwan reported poor work conditions during the COVID-19 outbreak (Li et al., 2021). Besides, Polish nurses reported unfavorable work conditions in healthcare facilities during the pandemic (Malinowska-Lipień et al., 2021). Furthermore, nurses in Iran expressed hospital inefficiency and poor organizational environment

during the outbreak (Moradi et al., 2021). Given that favorable nursing work conditions are a critical need during a crisis (Santos et al., 2021), urgent measures should be taken to improve the decent work conditions of healthcare facilities.

The study's results indicated that nurses with a diploma or associate degree reported experiencing decent working conditions during the COVID-19 pandemic compared to those with a bachelor's degree. This may be due to nurses possessing a bachelor's degree have higher expectations towards their work environment, requiring greater decent work to fulfill their expectations compared to their counterparts with diplomas or associate certificates who may be content with suboptimal work conditions. These results are consistent with Santos et al. (2021) and Falguera et al. (2021), highlighted that nurses' experience of working conditions varies depending on their educational level. However, in contrast to this study, Jarrar et al. (2021) and Hong and Lee (2020) concluded that there were no significant differences in nurses' perceptions of work conditions based on their education.

Additionally, the results indicated that nurses with ten or fewer years of experience in the nursing profession obtained more experience of decent working conditions than those with more than ten years. This may be due to that expectations of younger nurses towards their work environment tend to decrease, and they may be satisfied with less compared to younger nurses who have higher expectations and aspirations towards their work environment. This finding is consistent with a previous study that reported a significant difference in the ratings of work environment satisfaction by years of nursing experience (Falguera et al., 2021; Hong & Lee, 2020). On the contrary, Jarrar et al. (2021) found no significant difference in the perception of work conditions based on years of experience.

Grit and personal-related characteristics

In this study, nurses exhibited a moderate level of grit during the COVID-19 pandemic, which may be attributed to the heavy workload caused by the outbreak and fear of transmitting the infection to family members. These results are in line with findings from studies conducted in Korea (Jeong et al., 2019), Burea, USA (Sellers et al., 2019), and China (C. Yang et al., 2022), which also showed moderate levels of grit among nurses. However, nurses in California (Burke et al., 2022) and the state of Indiana, USA (Huffman et al.,

2021) demonstrated a high level of grit. The moderate level of grit exhibited by nurses in this study is a problematic concern, particularly during times of crisis when nurses need to be grittier. Therefore, it is crucial to identify factors that may affect nurses' ability to exhibit grit, and apply all possible measures to improve it.

The results of the study suggest that age, marital status, and educational level can influence nurses' levels of grit during the COVID-19 pandemic. Nurses under 30 years of age showed higher levels of grit than their older counterparts, which may be due to their greater adaptability and openness to change. Single nurses also exhibited higher levels of grit than married and divorced nurses, possibly because they have fewer external responsibilities and commitments. Furthermore, nurses with an associate degree showed higher levels of grit than those with a bachelor's degree, possibly due to their greater practical experience and hands-on training.

These findings are consistent with previous research by Jeong et al. (2019), who also found that nurses' levels of grit can vary based on their age, marital status, and educational level. Lee and Shin (2020) partially support the results of this study, confirming that grit had significant differences with nurses' age and education level but no significant difference with their marital status. However, these findings differ from the results of Hee and Hee (2019) study, which found no significant differences between nurses' levels of grit and age or marital status. Instead, they found that nurses with higher levels of education exhibited greater levels of grit than their counterparts. Conversely, Yang and Wu (2021) study found no significant differences between nurses' levels of grit and their age, marital status, or educational level. It is possible that the different results in these studies could be attributed to various factors, such as differences in the individuals' backgrounds and cultures among the study participants.

Interprofessional teamness and personal-related characteristics

In this study, nurses reported a relatively moderate level of interprofessional teamness during the COVID-19 pandemic. These results may be related to various factors. For instance, the nature of the pandemic itself may have affected nurses' sense of teamness, as the highly infectious nature of COVID-19 and the need to limit exposure may have led to greater

individualization of care rather than collaborative efforts. Additionally, personal protective equipment requirements or physical distancing measures, which can make it difficult for them to communicate effectively together as a team. The findings are concur with those of Eckstrom et al. (2020) in USA, Kakemam et al. (2021) in Iran, and Tilden et al. (2016) in Oregon but contradict the results of Al Sabei et al. (2021) in the Sultanate of Oman in the Sultanate of Oman, who perceived a high level of teamness.

Study results showed that nurses who held a diploma or associate degree had a higher sense of working in an interprofessional team during the COVID-19 outbreak in comparison to counterparts with a bachelor's degree. The possible explanation for this finding is that nurses with a diploma or associate degree may have more experience working in interprofessional teams, as they often work closely with other healthcare professionals in their roles. In contrast, nurses with a bachelor's degree may have a greater focus on individualized patient care and may not have had as much exposure to working in interprofessional teams during their education and training.

In agreement with this study, Bae et al. (2017) asserted that staff nurses with higher education level has the tendency to work individually rather than collaboratively. Another study found that nurses with higher education levels showed less of a teamwork attitude than those with lower education levels (Goh et al., 2020). However, other studies have shown contrasting results, with some indicating no significant differences in nurses' perception of teamwork based on their education level (Başoğul, 2021; Rezaei et al., 2021)

Experience of decent work, grit, and interprofessional teamness

The study found that nurses who experience decent work conditions showed higher levels of grit during the COVID-19 pandemic. This could be attributed to the fact that decent work conditions provide nurses with a sense of support, safe and healthy working conditions, recognition, fair treatment, job security, and opportunities for professional development (International Labour Organization, 2019). These factors help nurses cope better with the pandemic, develop resilience and determination to overcome challenges, such as those presented by the pandemic. The study supports the view that the psychology of working

(Duffy et al., 2016) proposed that decent work enhances individual intrinsically and extrinsically motivated job behaviors, as well as perseverance to achieve their goals. Moreover, these results were also in line with a study by Di Fabio et al. (2021) suggesting that decent work is associated with staff functional and occupational capacity.

The study also demonstrated that nurses who experience decent work conditions have a more positive sense of interprofessional teamness during Covid-19 pandemic. This could be because when nurses have decent work conditions, they feel supported and valued, and their contributions are recognized. As a result, they may be more likely to collaborate and communicate effectively with their colleagues from different professional backgrounds. This finding is consistent with previous research suggesting that healthy nursing work environments promote interprofessional teamness (Labrague et al., 2022). Furthermore, Khalili et al. (2020) have assured that improving work conditions can be a potential strategy to foster interprofessional collaboration among nurses.

Furthermore, the study found that that nurses who exhibit higher levels of grit are more likely to have a stronger sense of interprofessional teamwork during the COVID-19 pandemic. This could be because nurses who possess a higher degree of grit are more willing to overcome challenges and are more likely to feel empowered and confident in their abilities, leading to better collaboration and communication with colleagues. In agreement with this results, Lin and Chen (2016) revealed that individuals who have a passion and inclination towards their work are more likely to engage in teamwork performance. Similarity, a systematic review of grit indicates that grit is a trait that can help individuals stay passionate about their team, and persist over time (Direito et al., 2019). Furthermore, Nouredine et al. (2016) confirmed that the grit of nurses has been identified as a means to build collaboration, communication, and teamwork.

Conclusions

Nurses in this study experienced a low level of decent work conditions during the Covid-19 pandemic, while exhibiting a moderate level of grit and interprofessional teamness. Decent work conditions were significantly associated with nurses' educational level and years of experience in nursing, while nurses' level of grit varied according to their age, marital status, and educational level. Additionally, interprofessional

teamness differed based on nurses' educational level. Importantly, the study highlights the role of securing decent work conditions in fostering nurses' grit and interprofessional teamness, and the crucial role of nurses' grit in enhancing interprofessional teamness during the Covid-19 pandemic.

Recommendations:

Based on the findings of the study, the following recommendations are suggested:

- Healthcare policy makers should prioritize investment in improving work conditions with decent work characteristics, to increase nurses' grit and interprofessional teamness, especially during a crisis period.
- Healthcare institutions should provide adequate support, competitive wages, fair treatment, recognition, enough job security, break time during work hours, and adequate health insurance coverage to promote decent work conditions for nurses to better cope with challenges.
- Nursing managers should organize regular online meetings and listen to nurses' concerns about the practice environment to identify problems and target solutions.
- Healthcare facilities should establish a professional human resource consultation team to regularly evaluate the healthcare environment and respond to emerging issues.
- Interventions should be provided to familiarize nurses with the unique working conditions associated with the pandemic.
- Nursing organizations should provide programs for nursing administrators to establish strategies to cope with work condition deteriorations caused by the pandemic.
- Implementing interventions to enhance nurses' grit in response to the pandemic is warranted.
- Healthcare administrators should value cooperation and teamwork among nursing staff and other healthcare professionals and find strategies to foster such behaviors.
- Nurse managers should serve as role models by displaying more grit and interprofessional teamness with their colleagues during crises.
- Further studies investigating other predictors of nurses' grit and interprofessional teamness are essential.

References

- Al Sabei, S. D., AbuAlRub, R., Labrague, L. J., Ali Burney, I., & Al-Rawajfah, O. (2021). The impact of perceived nurses' work environment, teamness, and staffing levels on nurse-reported adverse patient events in Oman. *Nursing Forum*, 56(4), 897–904. <https://doi.org/10.1111/NUF.12639>
- Bae, S. H., Farasat, A., Nikolaev, A., Seo, J. Y., Foltz-Ramos, K., Fabry, D., & Castner, J. (2017). Nursing teams: Behind the charts. *Journal of Nursing Management*, 25(5), 354–365. <https://doi.org/10.1111/JONM.12473>
- Baçoğul, C. (2021). Conflict management and teamwork in workplace from the perspective of nurses. *Perspectives in Psychiatric Care*, 57(2), 610–619. <https://doi.org/10.1111/PPC.12584>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186–3191. <https://doi.org/10.1097/00007632-200012150-00014>
- Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling: *Sociological Methods and Research*, 16(1), 78–117. <https://doi.org/10.1177/0049124187016001004>
- Burke, L., Rebesch, L., Weismuller, P., Bulmer, S., & Kehoe, P. (2022). Grit levels of graduate nursing students: Why grit is needed in nursing. *Journal of Nursing Education*, 61(4), 197–200. <https://doi.org/10.3928/01484834-20220209-05>
- Di Fabio, A., & Kenny, M. E. (2019). Decent work in Italy: Context, conceptualization, and assessment. *Journal of Vocational Behavior*, 110, 131–143. <https://doi.org/10.1016/J.JVB.2018.10.014>
- Di Fabio, A., Svicher, A., & Gori, A. (2021). Occupational fatigue: Relationship with personality traits and decent work. *Frontiers in Psychology*, 12, 3782. <https://doi.org/10.3389/FPSYG.2021.742809/BIBTEX>
- Direito, I., Chance, S., & Malik, M. (2019). The study of grit in engineering education research: A systematic literature review.

- European Journal of Engineering Education*, 46(2), 161–185.
<https://doi.org/10.1080/03043797.2019.1688256>
- Dodd, V., Hooley, T., & Burke, C. (2019). Decent work in the UK: Context, conceptualization, and assessment. *Journal of Vocational Behavior*, 112, 270–281.
<https://doi.org/10.1016/J.JVB.2019.04.002>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087–1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment*, 91(2), 166–174.
<https://doi.org/10.1080/00223890802634290>
- Duffy, R. D., Allan, B. A., England, J. W., Blustein, D. L., Autin, K. L., Douglass, R. P., Ferreira, J., & Santos, E. J. R. (2017). The development and initial validation of the Decent Work Scale. *Journal of Counseling Psychology*, 64(2), 206–221.
<https://doi.org/10.1037/COU0000191>
- Duffy, R. D., Blustein, D. L., Diemer, M. A., & Autin, K. L. (2016). The psychology of working theory. *Journal of Counseling Psychology*, 63(2), 127–148.
<https://doi.org/10.1037/COU0000140>
- Duffy, R. D., Kim, H. J., Gensmer, N. P., Raque-Bogdan, T. L., Douglass, R. P., England, J. W., & Buyukgoze-Kavas, A. (2019). Linking decent work with physical and mental health: A psychology of working perspective. *Journal of Vocational Behavior*, 112, 384–395.
<https://doi.org/10.1016/J.JVB.2019.05.002>
- Eckstrom, E., Tilden, V. P., & Tuepker, A. (2020). Teamness, burnout, job satisfaction and decision-making in the VA Centers of Excellence in Primary Care Education. *Journal of Interprofessional Education & Practice*, 19, 100328.
<https://doi.org/10.1016/J.XJEP.2020.100328>
- El-Monshed, A. H., Loutfy, A., Saad, M. T., Ali, A. S., El-Gilany, A. H., Mohamed, A. S., Salah, M., & Zoromba, M. (2022). Satisfaction with life and psychological distress during the COVID-19 pandemic: An Egyptian online cross-sectional study. *African Journal of Primary Health Care and Family Medicine*, 14(1).
<https://doi.org/10.4102/PHCFM.V14I1.2896>
- Falguera, C. C., De los Santos, J. A. A., Galabay, J. R., Firmo, C. N., Tsaras, K., Rosales, R. A., Mirafuentes, E. C., & Labrague, L. J. (2021). Relationship between nurse practice environment and work outcomes: A survey study in the Philippines. *International Journal of Nursing Practice*, 27(1), e12873.
<https://doi.org/10.1111/IJN.12873>
- Ferraro, T., Rebelo, N., Santos, D., Moreira, J. M., & Pais, L. (2020). Decent work, work motivation, work engagement and burnout in Physicians. *International Journal of Applied Positive Psychology* 2020 5:1, 5(1), 13–35. <https://doi.org/10.1007/S41042-019-00024-5>
- Goh, P. Q. L., Ser, T. F., Cooper, S., Cheng, L. J., & Liaw, S. Y. (2020). Nursing teamwork in general ward settings: A mixed-methods exploratory study among enrolled and registered nurses. *Journal of Clinical Nursing*, 29(19–20), 3802–3811.
<https://doi.org/10.1111/JOCN.15410>
- Häussl, A., Ehmann, E., Pacher, A., Knödl, K., Huber, T., Neundlinger, L., Osmanovic, A., Plank-Straner, A., Walter, P., Schüssler, S., & Schoberer, D. (2021). Psychological, physical, and social effects of the COVID-19 pandemic on hospital nurses. *International Nursing Review*, 68(4), 482–492. <https://doi.org/10.1111/INR.12716>
- Hee, S., & Hee, M. (2019). Relationships among grit, job satisfaction, and the intention to stay of clinical nurses in Korea. *Journal of Korean Clinical Nursing Research*, 25(3), 285–293.
<https://doi.org/10.22650/JKCNR.2019.25.3.285>
- Hong, K. J., & Lee, Y. (2020). The moderating effect of nursing practice environment on the relationship between clinical nurses' sleep quality and wellness. *International Journal of Environmental Research and Public Health*, 17(19), 7068.
<https://doi.org/10.3390/IJERPH17197068>

- Htay, M. N. N., Marzo, R. R., Bahari, R., AlRifai, A., Kamberi, F., El-Abasiri, R. A., Nyamache, J. M., Hlaing, H. A., Hassanein, M., Moe, S., Abas, A. L., & Su, T. T. (2021). How healthcare workers are coping with mental health challenges during COVID-19 pandemic? - A cross-sectional multi-countries study. *Clinical Epidemiology and Global Health, 11*, 100759.
<https://doi.org/10.1016/J.CEGH.2021.100759>
- Huffman, E. M., Athanasiadis, D. I., Anton, N. E., Haskett, L. A., Doster, D. L., Stefanidis, D., & Lee, N. K. (2021). How resilient is your team? Exploring healthcare providers' well-being during the COVID-19 pandemic. *The American Journal of Surgery, 221*(2), 277–284.
<https://doi.org/10.1016/J.AMJSURG.2020.09.005>
- Hui, D. S., I Azhar, E., Madani, T. A., Ntoumi, F., Kock, R., Dar, O., Ippolito, G., Mchugh, T. D., Memish, Z. A., Drosten, C., Zumla, A., & Petersen, E. (2020). The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health — The latest 2019 novel coronavirus outbreak in Wuhan, China. *International Journal of Infectious Diseases, 91*, 264–266.
<https://doi.org/10.1016/j.ijid.2020.01.009>
- International Labour Organization. (2019). *Decent work*. 2019.
<https://www.ilo.org/global/topics/decent-work/lang--en/index.htm>
- International Labour Organization. (2020). *Improving nurses' and midwives' working conditions: An investment in resilience for all*. http://www.ilo.org/secsoc/press-and-media-centre/news/WCMS_740827/lang--en/index.htm
- Jarrar, M., Al-Bsheish, M., Aldhmadi, B. K., Albaker, W., Meri, A., Dauwed, M., & Minai, M. S. (2021). Effect of practice environment on nurse reported quality and patient safety: The mediation role of person-centeredness. *Healthcare, 9*(11).
<https://doi.org/10.3390/HEALTHCARE9111578>
- Jassar, A. S., Perkins, K. E., & Sundt, T. M. (2021). Teamwork in the time of coronavirus: An MGH experience. *Journal of Cardiac Surgery, 36*(5), 1644–1648.
<https://doi.org/10.1111/JOCS.15036>
- Jeong, J. Y., Seo, Y. S., Choi, J. H., Kim, S. H., Lee, M. S., Hong, S. H., Choi, J. S., & Park, D. E. (2019). The influence of grit on turnover intention of university hospital nurses: The mediating effect of job involvement. *Journal of Korean Academy of Nursing, 49*(2), 181–190.
<https://doi.org/10.4040/JKAN.2019.49.2.181>
- Kakemam, E., Hajizadeh, A., Azarmi, M., Zahedi, H., Gholizadeh, M., & Roh, Y. S. (2021). Nurses' perception of teamwork and its relationship with the occurrence and reporting of adverse events: A questionnaire survey in teaching hospitals. *Journal of Nursing Management, 29*(5), 1189–1198.
<https://doi.org/10.1111/JONM.13257>
- Kennedy, A. (2021). The International Council of Nurses in the time of the COVID-19 pandemic. *International Nursing Review, 68*(2), 144–146.
<https://doi.org/10.1111/INR.12681>
- Labrague, L. J., Al Sabei, S., Al Rawajfah, O., AbuAlRub, R., & Burney, I. (2022). Interprofessional collaboration as a mediator in the relationship between nurse work environment, patient safety outcomes and job satisfaction among nurses. *Journal of Nursing Management, 30*(1), 268–278.
<https://doi.org/10.1111/JONM.13491>
- Lee, S., & Shin, Y. (2020). Social support, grit, health status, and work-life balance of nurses. *Korean Journal of Health Promotion, 20*(4), 194–202.
<https://doi.org/10.15384/KJHP.2020.20.4.194>
- Lin, C. P., & Chen, Y. F. (2016). Modeling team performance: The moderating role of passion. *Journal of Leadership and Organizational Studies, 23*(1), 96–107.
<https://doi.org/10.1177/1548051815616252>
- Llop-Gironés, A., Vračar, A., Llop-Gironés, G., Benach, J., Angeli-Silva, L., Jaimez, L., Thapa, P., Bhatta, R., Mahindrakar, S., Bontempo Scavo, S., Nar Devi, S., Barria, S., Marcos Alonso, S., & Julià, M. (2021). Employment and working conditions of nurses: where and how health inequalities have increased during the COVID-19 pandemic? *Human Resources for Health, 19*(1), 1–11.

- <https://doi.org/10.1186/S12960-021-00651-7>/FIGURES/1
- Loewenson, R. (2021). Rethinking the paradigm and practice of occupational health in a world without decent work: A perspective from East and Southern Africa. *A Journal of Environmental and Occupational Health Policy*, 31(2), 107–112. <https://doi.org/10.1177/10482911211017106>
- Lopez, V., Anderson, J., West, S., & Cleary, M. (2021). Does the COVID-19 pandemic further impact nursing shortages? *Issues in Mental Health Nursing*, 43(3), 293–295. <https://doi.org/10.1080/01612840.2021.1977875>
- Nunnally, J. (1978). *Psychometric Theory*. McGraw-Hill.
- Polit, D. F., & Beck, C. T. (2010). *Essential of nursing research: Appraising evidence for nursing practice* (7th ed.). Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Rezaei, S., Roshangar, F., Rahmani, A., Tabrizi, F., Sarbakhsh, P., & Parvan, K. (2021). Emergency nurses' attitudes toward interprofessional collaboration and teamwork and their affecting factors: A cross-sectional study. *Nursing and Midwifery Studies*, 10(3), 173. https://doi.org/10.4103/NMS.NMS_99_20
- Santos, J. L. G. dos, Balsanelli, A. P., Freitas, E. de O., Menegon, F. H. A., Carneiro, I. A., Lazzari, D. D., Menezes, J. A. L. De, Erdmann, A. L., & Camponogara, S. (2021). Work environment of hospital nurses during the COVID-19 pandemic in Brazil. *International Nursing Review*, 68(2), 228–237. <https://doi.org/10.1111/INR.12662>
- Schimschal, S. E., Visentin, D., Kornhaber, R., & Cleary, M. (2020). Grit: A Concept Analysis. *Issues in Mental Health Nursing*, 42(5), 495–505. <https://doi.org/10.1080/01612840.2020.1814913>
- Seguin, C. (2019). A survey of nurse leaders to explore the relationship between grit and measures of success and well-being. *Journal of Nursing Administration*, 49(3), 125–131. <https://doi.org/10.1097/NNA.0000000000000725>
- Sellers, K., Riley, M., Denny, D., Rogers, D., Havener, J.-M., Rathbone, T., & Cesare, C. G.-D. (2019). View of retention of nurses in a rural environment: The impact of job satisfaction, resilience, grit, engagement, and rural fit. *Online Journal of Rural Nursing and Health Care*, 19(1), 4–42. <https://doi.org/10.14574/OJRNHC.V19I1.547>
- Terry, D., & Peck, B. (2020). Factors that impact measures of grit among nursing students: A journey emblematic of the Koi fish. *European Journal of Investigation in Health, Psychology and Education* 2020, Vol. 10, Pages 564-574, 10(2), 564–574. <https://doi.org/10.3390/EJIHPE10020041>
- Tilden, V. P., Eckstrom, E., & Dieckmann, N. F. (2016). Development of the assessment for collaborative environments (ACE-15): A tool to measure perceptions of interprofessional “teamness.” *Journal of Interprofessional Care*, 30(3), 288–294. <https://doi.org/10.3109/13561820.2015.1137891>
- Tyer-Viola, L. A. (2019). Grit: The essential trait of nurses during a disaster. *Journal of Perinatal and Neonatal Nursing*, 33(3), 201–204. <https://doi.org/10.1097/JPN.0000000000000416>
- World Health Organization. (2020). *State of the world's nursing: Investing in education, jobs and leadership*. WHO; Universidad de Concepción. <https://www.who.int/publications/i/item/9789240003279>
- Xu, Y., Liu, D., & Tang, D. S. (2022). Decent work and innovative work behaviour: Mediating roles of work engagement, intrinsic motivation and job self-efficacy. *Creativity and Innovation Management*, 31(1), 49–63. <https://doi.org/10.1111/CAIM.12480>
- Yang, C., Yang, L., & Wu, D. (2022). The influence of grit on nurse job satisfaction: Mediating effects of perceived stress and moderating effects of optimism. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/FPSYG.2022.1094031>
- Yang, L., & Wu, D. (2021). Grit and meaning in life of Chinese nurses: The chain mediating effect of social support and hope. *Frontiers in Psychology*, 12, 5056. <https://doi.org/10.3389/FPSYG.2021.769707/BIBTEX>