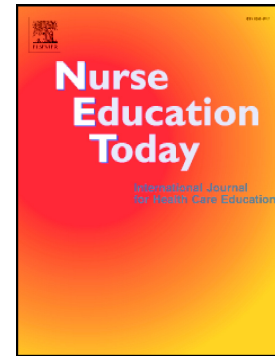


## Journal Pre-proof

Examining the associations between self-care practices and psychological distress among nursing students during the COVID-19 pandemic

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**Title:**

Examining the associations between self-care practices and psychological distress among nursing students during the COVID-19 pandemic

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**Contributions to Manuscript:**

K.R. Brouwer drafted the abstract, introduction and discussion section. C. Okoli and K.R. Brouwer analyzed the data and drafted the results section. K.R. Brouwer, C. Okoli, L.A. Walmsley and C.E.C Braido reviewed the manuscript. E.M. Parrish reviewed the manuscript and provided intellectual contributions. A.K. McCubbin also reviewed the manuscript and added helpful comments. All authors hold themselves jointly to the content in the manuscript.

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**Title: Examining the associations between self-care practices and psychological distress among nursing students during the COVID-19 pandemic**

**Abstract**

There is limited research regarding the impact of self-care practices on psychological distress, specifically on nursing students during a pandemic, such as COVID-19 (Corona Virus Disease- 2019). A 10-minute electronic survey was sent to nursing students at a large academic-medical center, and data from 285 student respondents were analyzed to assess psychological status, attitudes and behaviors in regards to the COVID-19 pandemic. Significant differences were found when comparing self-care practice scores by school grade for total scores ( $F=4.48$  [ $df=4,250$ ],  $p=.002$ ), emotional subscale ( $F=4.78$  [ $df=4,250$ ],  $p=.001$ ), and relationship subscale ( $F=3.44$  [ $df=4,250$ ],  $p=.009$ ). While there were no significant differences in psychological distress by school grade, graduate students had the lowest self-care practice score compared to all the other grades. Finally, the subscale and total self-care practice scores were significantly and negatively associated with psychological distress. These findings suggest that utilization of self-care practices is associated with lower psychological distress, and should therefore be promoted among nursing student populations and integrated into curricula. Future studies should assess specific needs geared towards populations that may have poor self-care practices, such as graduate students, and understand ways to improve sleep quality to mitigate rates of psychological distress during a pandemic.

**Introduction**

An important mental health issue resulting from the Corona Virus Disease- 2019 (COVID-19) pandemic is psychological distress, an uncomfortable or overwhelming emotional

state brought on by events, stressors, or difficulties in one's life (Ridner, 2004). In fact, nursing students as a group, globally, may be inherently more vulnerable to psychological distress. For example, a recent systematic review of nursing students from several countries reported low levels of psychological well-being, indicated by high levels of stress and incidence of negative psychological health (Z. S. Li & Hasson, 2020). In a longitudinal study of 622 nursing students in Italy, utilizing the General Health Questionnaire-12 (GHQ-12), researchers found that greater than 70% had significant levels of psychological distress (Salvarani et al., 2020). The GHQ-12 is a self-reported instrument that screens participants for mental health disorders (Goldberg & Hillier, 1979). In a sample of 121 nursing students from a university in England, researchers found that students exhibited levels of psychological distress higher than the general population on the Symptom Checklist-90-Revised (SCL-90-R) psychometric questionnaire (Mitchell, 2018). The SCL-90-R is an instrument that measures a variety of psychological problems and symptoms in patients (Derogatis, 1983). In a study of 145 nursing students from a college in India, nearly 21% had psychological distress based on the General Health Questionnaire (GHQ) (Warbah et al., 2007). Multiple studies have shown the prevalence of psychological distress among nursing students during the COVID-19 pandemic, utilizing the Kessler-6 scale (Y. Li et al., 2020; Y. Wang et al., 2020). The Kessler-6 is a 6-item self-scored assessment that can help determine the risk for psychological distress and mental illness among its participants. Although the experience of such distress is often cited as an important reason for nursing students deciding to leave the nursing profession, its full contribution to actual attrition is unclear (Bakker et al., 2019; Deary, Watson, & Hogston, 2003; Hamshire, Willgoss, & Wibberley, 2013). Nevertheless, given their increased vulnerability to psychological distress, it is even more

important to understand factors that may enhance such distress, particularly in the context of the current COVID-19 pandemic.

An important factor for mental well-being and a mitigator of psychological distress is the adoption of healthy self-care practices. Self-care is a process that incorporates the mental, physical, social and spiritual care practiced by an individual aimed at improving their own well-being (Matarese, Lommi, De Marinis, & Riegel, 2018). It is well known that deliberate self-care practices are able to reduce stress among nursing students (Henkel & Laux, 2014). For example, Koren (2017) found that brief mindfulness sessions (10 minutes) taught to nursing students could decrease their stress and increase awareness of the present moment. Self-care practices, which foster an appropriate school-life balance, are critical for student mental well-being; however, nursing students may face challenges in following recommendations for some basic self-care practices, including diet and exercise. For instance, in a survey of 94 nursing students in Australia, researchers found that 82% reported having at least one modifiable health risk factor and 42% were either overweight or obese (Purcell, Moyle, & Evans, 2006). Such findings are of even greater importance given the current COVID-19 pandemic and the mandated school-imposed home quarantines, which may further diminish a student's ability to practice self-care. Therefore, it is important to assess self-care practices of nursing students in order to determine their impact on psychological distress in the context of home mandated quarantines due to the current pandemic.

It is evident that recent public health crises (for example, Severe Acute Respiratory Syndrome, Hemagglutinin1 Neuraminidase1/H1N1, COVID-19) have had detrimental effects on nursing and other healthcare students' psychological wellbeing (Huang, Lei, Xu, Liu, & Yu, 2020; JIA, FAN, & LU, 2003; J. Li, Chen, Zhu, & Zhang, 2011; C. Wang & Zhao, 2020).

Given that there is limited research on the mental and psychological impacts of the current COVID-19 pandemic on nursing students, the purpose of this study was to examine the associations between self-care practices and psychological distress among nursing students in the context of mandatory quarantine from school during the COVID-19 pandemic. Specifically, among nursing students at a large academic-medical center, the aims of our study were to:

1. Examine self-care practices and psychological distress rates
2. Assess demographic (age, gender, ethnicity, sexual orientation, grade level, marital status, employment status, living situation) and behavioral (dietary practices and exercise) correlates of self-care practices and psychological distress
3. Determine the association between self-care practices and psychological distress, controlling for demographic and behavioral variables

## Methods

*Design:* This study employed a correlational design using an electronic survey to examine the associations between self-care practices and psychological distress among nursing students during the COVID-19 pandemic.

*Sample:* The sample for this study was obtained from nursing students at a large academic-medical center. The eligibility criterion was being currently enrolled as an undergraduate or graduate student. The exclusion criteria included being from another institution or college other than Nursing. In the academic year, 2018-2019, there were 1,383 students enrolled at the college

(<https://www.uky.edu/nursing/sites/www.uky.edu.nursing/files/2018-2019%20Annual%20Report%208-7-19%20-%20FINAL.pdf>).

*Procedures:* The study was approved by the University Institutional Review Board (IRB). We developed a 10-minute survey using Qualtrics, a web-based survey tool, regarding nursing students' psychological status, attitudes and behaviors in response to the COVID-19 pandemic. An invitation to participate in the survey was sent to all students currently enrolled through email listservs, and the survey was administered for a 1-month period ranging from April 27<sup>th</sup> to June 1<sup>st</sup>, 2020. Upon completion of the surveys, participants were entered into a drawing for one of four \$50 visa gift cards.

### Measures

*Demographics:* The survey had self-reported information that included age categories, sex, ethnicity, gender identity, marital status, having children living in the home, employment status, living situation in the past two weeks, and grade in school.

*Self-Care Practices:* The survey also incorporated measures of self-care including average hours of sleep per night and average days of exercise in the past week. Participants self-reported perceived self-care via sixteen questions on the Self-Care Assessment survey examining five different dimensions of self-care: psychological, emotional, spiritual, relationship and workplace (Saakvitne & Pearlman, 1996). A Likert scale was used for each of the sixteen questions, with a range of 1 to 4 per item. A higher score correlated to a higher perception of self-care practices. For this study, the internal consistency was sufficient for the total scale (Cronbach's alpha=0.86) and the subscales (Cronbach's alpha=0.59-0.78).

*Psychological Distress:* Utilizing the Kessler Screening Scale for psychological distress, participants self-scored each of the 6-items on this assessment (Kessler et al., 2003). This assessment tool utilizes a Likert scale of 0 to 4 per item. Scores can range from 0, indicating low levels of psychological distress, to 24, indicating higher levels of psychological distress. Typically, a score of 13 to 24 is considered the cut off to denote serious mental illness (Kessler et al., 2003). This scale has been recently validated in college students (Kang et al., 2015). The internal consistency of this scale was appropriate (Cronbach's alpha = 0.86).

*Data Analysis:* Of the 285 individuals who initially participated in the survey, 30 individuals did not respond to information on the psychological distress scale. As a result, the subsequent analyses are based on 255 complete responses. Less than 3% of participants were missing any responses. Therefore, to address missing data, modal replacement was used for categorical data while mean replacement was used for continuous data. Descriptive statistics using means with standard deviations, or frequencies with percentages, were used to describe the demographic, behavioral, and main outcome variables. Chi-square analyses were used to examine differences in demographic and behavioral variables by school grade of participants. Analysis of Variance tests, with Levene's test for equality of variance, were used to examine differences in self-care practices and psychological distress scores by school grade. Pearson Correlations were used to assess the associations between self-care practice scores, and its subscale scores, and psychological distress scores. Finally, a multivariate regression analysis was used to examine the association between self-care practice and psychological distress scores while controlling for demographic and behavioral variables. All assumptions were met and all analyses were conducted using IBM SPSS statistics version 26 with an alpha level of 0.05 used to determine significance.

## Results

### *Sample Description*

The sample primarily consisted of students 18-25 years of age (82.4%), female (93.9%) and white, non-Hispanic (89.8%). Few participants were non-heterosexual (3.9%); however, a majority were single and never married (76.9%) and did not have children (90.2%). More than half of the participants were employed (56.5%), and during the time of the survey nearly half lived at home with parents or relatives (47.1%). Most of the respondents were third year nursing students (40.8%). There were significant differences in the school grade of respondent by age, gender, marital status, having children living in the home, employment status and current living situation. In other words, with increasing age, respondents were more likely to be in a higher academic grade level; graduate students had a higher proportion of males, those who were married, having children living in the home and were employed as compared to other academic grade levels; and lower academic grade levels were more likely to be living at home with parents/relatives as compared to graduate students (Table 1).

### *Differences in self-care practice and psychological distress scores by school grade*

Respondents had higher than average self-care practice mean scores (Mean=2.73, SD=0.48). The highest mean score was obtained on the emotional subscale (Figure 1). There were significant differences observed in self-care practices by school grade in the total self-care practice score ( $F=4.48$  [df=4,250],  $p=.002$ ), emotional subscale ( $F=4.78$  [df=4,250],  $p=.001$ ), and relationship subscale ( $F=3.44$  [df=4,250],  $p=.009$ ), with graduate students having the lowest self-

care practice scores compared to other academic grade levels. In terms of psychological distress, participants had a lower-than-average mean score (Mean=2.33, SD=0.79), however, there were no differences by academic grade level.

*Associations between self-care practice and psychological distress scores controlling for demographic and behavioral variables*

Each subscale score was significantly associated with the other and with the total self-care practice score (Table 2). In addition, both the total and subscale self-care practice scores were significantly and negatively correlated with psychological distress. In the multivariate analysis, total self-care practice scores remained significantly and negatively associated with psychological distress scores when controlling for demographic and behavioral variables (Table 3).

### **Discussion**

The purpose of our study was to assess practices of self-care and rates of psychological distress, determine the correlation of demographic and behavioral variables on self-care and psychological distress, and examine the associations between practices of self-care and psychological distress. On average, individuals participated in a variety of self-care practices. In addition, there were salient demographic and behavioral variables associated with psychological distress. We also found that self-care practices were negatively associated with levels of psychological distress. These findings have important implications for guiding practices and policies to enhance students mental-wellbeing in the context of mandated home quarantines during a pandemic.

Among demographic variables, the only variable associated with psychological distress was self-identification of being non-heterosexual. Other studies have found that non-heterosexual college students are more likely to experience psychological distress compared to their heterosexual peers (Assi, Maatouk, & Jaspal, 2020; Przedworski et al., 2015; Ridner, 2004). This increased risk for psychological distress suggests the importance of paying attention to the unique needs of non-heterosexual students, especially in the context of home mandated quarantines during a pandemic. In this specific population, unsafe home environments and/or unaccepting families may play a role in the high levels of psychological distress seen while home quarantining during the COVID-pandemic (Gonzales, Lore de Mola, Gavulic, McKay, & Purcell, 2020). Future studies using qualitative design may inquire about the self-perceived risks and challenges that are unique to non-heterosexual students when facing mandated quarantine. Such studies may enhance school-based interventions to support the needs of this vulnerable student group.

We also found that students who reported higher scores on self-care practices had lower psychological distress scores as has been found by prior studies (Ayala, Winseman, Johnsen, & Mason, 2018; Slonim, Kinnhous, Di Benedetto, & Reece, 2015). In addition, poor sleep hygiene was associated with increased psychological distress in our sample. The current pandemic has been associated with higher levels of reported sleep disturbances and overall reduction in quality of sleep among nursing students (Romero-Blanco et al., 2020). As a consequence, educating and providing students with the resources for proper sleep hygiene may be a crucial intervention in ameliorating psychological distress. Future studies are needed to examine interventions that could enhance healthy sleep practices among nursing students.

### **Implications**

While nursing students may believe that self-care is important, they may lack the knowledge and the resources to engage in practices of self-care (Younas, 2017). In order to create resilient student nurses, it may be important for students to be familiar with and practice different forms of self-care, such as mindfulness and meditation (Beddoe & Murphy, 2004; van der Riet, Levett-Jones, & Aquino-Russell, 2018). Without proper self-care practices in place during pandemic situations, students may be unequipped to handle the demands placed on them by their program of study. However, teaching students self-care can decrease psychological distress and increase student success in rigorous academic and clinical components of a nursing program (Green, 2020; McKenzie & Harris, 2013; Stark, Manning-Walsh, & Vliem, 2005). Thus, it is important for nursing institutions to develop curricula that enhance engagement and competence in self-care practices among nursing students. A curriculum that encourages faculty to teach and model practices of self-care in the clinical and classroom setting would enhance a students' ability to care for themselves during stressful situations.

### **Limitations**

The interpretation of our findings is affected by some important limitations. First, as a cross-sectional analysis, no causality can be inferred from our study findings. Moreover, as this study was based on a sample from a single institution, its generalizability to other institutions should be made with caution. Second, within the one-month timeframe of data collection, our response rate was only 18 % of the eligible student body. As such, our findings may not adequately represent the entire nursing student population at the college. Third, the self-care practices scale was based on an adaptation of an existing measure (Saakvitne & Pearlman, 1996).

However, the adapted scale has not been adequately validated. Although, the scale had adequate internal consistency, future studies may consider using other measures of self-care practices, such as the Health Promoting Lifestyle Profile II (Ayala et al., 2018; Slonim et al., 2015). Finally, the COVID-19 pandemic may have affected our ability to reach our intended population, given that students may have had disruptions in phone or internet service. Yet, our findings provide important contributions to the growing body of literature regarding the impact of the COVID-19 pandemic on nursing student psychological distress.

### **Conclusion**

Understanding self-care practices among nursing students and its impact on psychological distress remains an area of research priority for nursing. Our findings suggest the need to enhance the development of self-care practices among nursing students in order to mitigate unforeseen psychological consequences ensuing from home quarantines during a pandemic. Specifically, addressing sleep hygiene practices and providing resources for vulnerable student populations (e.g., non-heterosexual) should be targets for future interventions. By supporting the development of self-care practices among nursing students, we can create a more resilient nursing workforce for the future.

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Author Statement

K.R. Brouwer drafted the abstract, introduction and discussion section. C. Okoli and K.R. Brouwer analyzed the data and drafted the results section. K.R. Brouwer, C. Okoli, L.A. Walmsley and C.E.C Braido reviewed the manuscript. E.M. Parrish reviewed the manuscript and provided intellectual contributions. A.K. McCubbin also reviewed the manuscript and added helpful comments. All authors hold themselves jointly to the content in the manuscript.

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Table 1. Demographic and Behavioral characteristics of sample

	Total		Sophomore		Junior		Senior		Second Career		Graduate	
	N	%	n	%	n	%	n	%	n	%	n	%
<b>Age***</b>												
18 to 25 years	210	82.4	57	100.0	99	95.2	37	97.4	16	59.3	1	3.4
26 to 35 years	29	11.4	0	0	5	4.8	0	0	8	29.6	16	55.2
36 years or older	16	6.3	0	0	0	0	1	2.6	3	11.1	12	41.4
<b>Sex**</b>												
Female	238	93.9	55	96.5	98	94.2	37	97.4	26	96.3	22	75.9
Male	17	6.7	2	3.5	6	5.8	1	2.6	1	3.7	7	24.1
<b>Ethnicity</b>												
White, non-Hispanic	229	89.8	51	89.5	97	93.3	33	92.1	23	85.2	23	79.3
Non-White	26	10.2	6	10.5	7	6.7	3	7.9	4	14.8	6	20.7
<b>Gender Identity</b>												
Heterosexual	245	96.1	55	96.5	100	96.2	37	97.4	26	96.3	27	93.1
Non-Heterosexual	10	3.9	2	3.5	4	3.8	1	2.6	1	3.7	2	6.9
<b>Marital Status***</b>												
Married	32	12.5	3	5.3	0	0	1	2.6	8	29.6	20	69.0
Unmarried, but cohabitating w/ significant other	27	10.6	3	5.3	10	9.6	4	10.5	4	14.8	6	20.7
Single, Never Married	196	76.9	51	89.5	94	90.4	33	86.8	15	55.6	3	10.3
<b>Have children***</b>												
Yes	25	9.8	4	7.0	2	1.9	1	2.6	6	22.2	12	41.4
No	230	90.2	53	93.0	102	98.1	37	97.4	21	77.8	17	58.6
<b>Employment Status***</b>												
Unemployed	111	43.5	31	54.4	54	51.9	14	36.8	10	37.0	2	6.9
Employed part-time	107	42.0	25	43.9	46	44.2	19	50.0	11	40.7	6	20.7
Employed full-time	37	14.5	1	1.8	4	3.8	5	13.2	6	22.2	21	72.4
<b>Living situation (past 2 weeks)***</b>												
Live by self in house/apartment	23	9.0	5	8.8	9	8.7	2	5.3	4	14.8	3	10.3
Live in shared apartment/house with	62	24.3	5	8.8	33	31.7	16	42.1	7	25.9	1	3.4

housemates												
Living at home with spouse/partner	42	16.5	2	3.5	1	1.0	4	10.5	11	40.7	24	82.8
Living at home with parents/relatives	120	47.1	43	75.4	59	56.7	12	31.6	5	18.5	1	3.4
Other/no fixed residence/two residences	8	3.1	2	3.5	2	1.9	4	10.5	0	0	0	0
<b>Average hours of sleep</b>												
6 hours or less	65	25.5	12	21.1	25	24.0	10	26.3	10	37.0	8	27.6
7 to 9 hours	170	66.7	39	68.4	67	64.4	27	71.1	17	63.0	20	69.0
10 hours or more	20	7.8	6	10.5	12	11.5	1	2.6	0	0.0	1	3.4
<b>Average days of exercise in past week</b>												
0 Days	40	15.7	9	15.8	17	16.3	3	7.9	2	7.4	9	31.0
1-2 Days	104	40.8	24	42.1	42	40.4	17	44.7	9	33.3	12	41.4
3-4 Days	74	29.0	21	36.8	28	26.9	9	23.7	9	33.3	7	24.1
5 Days or more	37	14.5	3	5.3	17	15.3	9	23.7	7	25.9	1	3.4

\*\*p<.01, \*\*\*p<.0001

Table 2. Associations between self-care total and subscales and psychological distress scores

	Overall Self-care	Psychological	Emotional	Spiritual	Relationship	Work
Overall Self-care						
Psychological	.62***					
Emotional	.74***	.27***				
Spiritual	.77***	.42***	.41***			
Relationship	.77***	.26***	.62***	.40***		
Work	.70***	.29***	.46***	.35***	.57***	
Psychological Distress	-.43***	-.21**	-.36***	-.29***	-.36***	-.36***

\*\*p<.01, \*\*\*p<.0001

Table 3. Associations between self-care practices and psychological distress controlling for demographic and behavioral variables

N = 255, Adjusted R <sup>2</sup> = .25; F = 4.45, p < .0001					
		<b>B</b>	<b>Standard error</b>	<b>Beta</b>	<b>P-Value</b>
<b>Age</b>					
	18-25 years (referent)	1.00	--	--	--
	26-35 years	.22	.23	.09	.348
	36 years or older	.16	.31	.05	.602
<b>Sex</b>					
	Female	.10	.19	.03	.585
	Male (referent)	1.00	--	--	--
<b>Gender</b>					
	Heterosexual	-.46	.23	-.11	<b>.051</b>
	Non-heterosexual (referent)	1.00	--	--	--
<b>Ethnicity</b>					
	White	-.08	.15	-.03	.612
	Non-White (referent)	1.00	--	--	--
<b>Marital Status</b>					
	Married, living with spouse	-.45	.31	-.19	.150
	Unmarried, but cohabiting with significant other	-.14	.8	-.05	.449
	Single, never married	1.00	--	--	--
<b>Children living at home</b>					
	Yes	.17	.19	.06	.374
	No (referent)	1.00	--	--	--
<b>Year in School</b>					
	2 <sup>nd</sup> year	.24	.28	.13	.394
	3 <sup>rd</sup> year	.29	.27	.24	.150
	4 <sup>th</sup> year	.93	.28	.01	.923
	2 <sup>nd</sup> Career/RN-BSN	.17	.24	.07	.484
	Graduate	1.00	--	--	--
<b>Employment Status</b>					
	Unemployed (referent)	1.00	--	--	--
	Employed Part time	.18	.10	.11	.075
	Employed Full time	.15	.17	.07	.391
<b>Living situation (past 2 weeks)</b>					
	Live by self in house/apartment	-.38	.30	-.14	.203
	Live in shared apartment/house with housemates	-.32	.27	-.17	.236
	Living at home with spouse/partner	-.39	.37	-.18	.295
	Living at home with parents/relatives	-.46	.26	-.29	.079
	Other (e.g., no fixed residence) (referent)	1.00	--	--	--
<b>Average Sleep</b>					
	6 hours or less (referent)	1.00	--	--	--
	7-9 hours	-.26	.11	<b>-.15</b>	<b>.015</b>
	10 hours or more	-.62	.19	<b>-.21</b>	<b>.001</b>
<b>Exercise in past week</b>					
	No days	1.00	--	--	--
	1-2 days	.02	.14	.01	.875
	3-4 days	-.04	.15	-.02	.781
	5 days or more	-.06	.17	-.03	.707
<b>Self-care total score</b>		<b>-.69</b>	<b>.10</b>	<b>-.43</b>	<b>&lt;.0001</b>

Figure 1. Mean total and subscale self-care practices scores (N=255)

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Highlights of Paper 2

1. Self-care practices are critical for nursing students facing home-based quarantine during the COVID-19 Pandemic
2. There were significant differences observed in total self-care practices by school grade
3. Total self-care practice scores were significantly and negatively associated with psychological distress
4. Poor sleep was significantly and negatively associated with psychological distress
5. Integrating self-care practices curricula in nursing programs may support student psychological well-being

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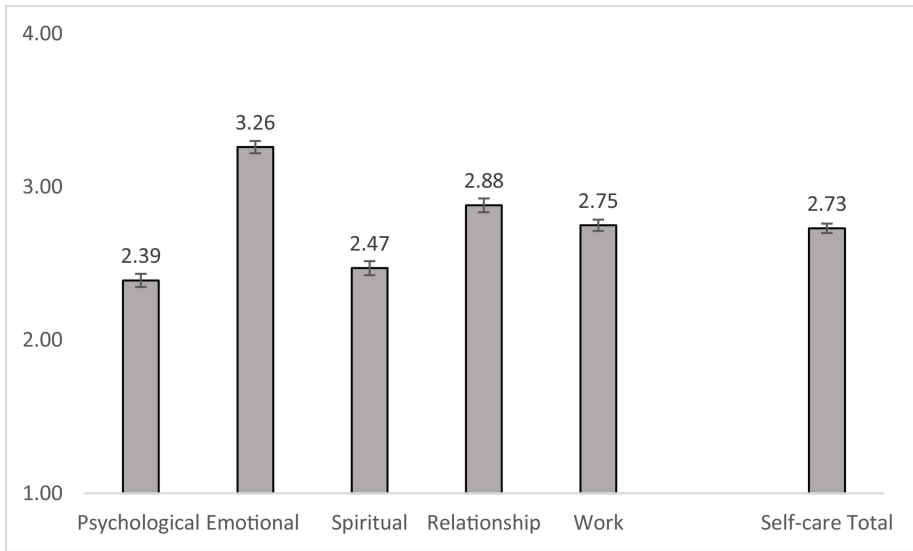


Figure 1