



Are nursing students flourish or languish in their mental health?

Hapugahapitiye Mohottalalage Renu Kalhari Geethani Nandasena^{a,*},
Paskuwelge Thilina Sajith Prasanga^b,
Atapattu Mudiyansele Muditha Piumali Atapattu^a

^a Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka

^b Post Graduate Institute of Medicine, University of Colombo, Sri Lanka

ARTICLE INFO

Keywords:

Positive mental health
Nursing students

ABSTRACT

Background: Positive mental health (PMH) is the presence of emotional, social, and psychological well-being.

Objective: To determine the level of positive mental health and associated factors among nursing students in a public university in Sri Lanka.

Methods: A descriptive cross-sectional study was conducted among 185 nursing students. Data was collected using a self-administered questionnaire. Students were categorized as Flourished, Moderate and Languished.

Results: Out of 185 students 170 responded. Mean age was 23.5 years (SD = 1.3). Of them 25.3% flourished and 32.7% languished. Students who engaged in leisure activities and social activities were more flourished whereas students who have diagnosed with chronic illness/es, mental illness/es and had any family member/s suffering with a severe illness/es were more languished.

Conclusion: Involvement in leisure activities, social activities, status of physical and mental health and family member health status were associated with the level of positive mental health.

1. Introduction

Being mentally healthy is not merely the absence of a mental illness. Studies on mental health show a shift from mental disorder and dysfunction to concepts of well-being and positive mental health [1–3]. Positive mental health is defined as the presence of emotional, psychological and social wellbeing [4]. Emotional wellbeing reflects happiness, the individual experience of pleasant emotions and the general satisfaction with life. Psychological wellbeing reflects the individuals functioning in life while realizing their potential to encounter challenges. Individuals' evaluations of their public and social lives describe social wellbeing. Simply, positive mental health is a combination of feeling good about and functioning well in life [5]. It enables people to realize their full potential in coping with the stresses of life and work productively while making meaningful contributions to their communities [6]. A good level of positive mental health predicts reduction of mental illness while its lower levels predicts increase of mental illnesses [7]. However evaluation of positive mental health is challenging due to its different conceptually distinct models [8]. To overcome this challenge, Keyes developed the short form of mental health continuum which measures three levels of positive mental health as flourishing, moderate and languishing [9].

It identifies as flourishing when people experience positive emotions and functioning well from both psychological and social

* Corresponding author.

E-mail address: renukalhari@ahs.pdn.ac.lk (H.M. Renu Kalhari Geethani Nandasena).

aspects. On the other hand people with incomplete mental health and wellbeing who conceived emptiness and stagnation are diagnosed as languishing [4]. Individuals who are neither flourishing nor languishing are diagnosed with moderate mental health [9].

In Sri Lanka most of the research studies have been focused on mental illnesses. Nevertheless, none of the research studies has been focused on positive mental health and there is no published data available among Sri Lankans.

This study will assess the level of positive mental health and associated factors among nursing students. Nursing is considered as one of the most stressful professions in the world [10]. Hence, adjusting to a nursing career is very stressful. They face certain stressful events in their study period that lead to negative consequences in their academic, professional and personal life [11–13]. Frequent stress makes a great impact on the physical and mental wellbeing of nursing students resulting in higher levels of burnout rate, stress and more importantly the low levels of positive mental health [14–16]. These outcomes can impact not only on the wellbeing of nursing students but also on their ability to practice effectively. Therefore promoting positive mental health among nursing students can result in improvement in the quality of care they provide to patients [17].

Furthermore, the identification of associated factors will be a way forward in development of the study place or setting to promote the level of the positive mental health among nursing students. It will increase the quality of life of those individuals and more importantly the quality of patient care.

2. Methodology

2.1. Study design and setting

This was a descriptive cross-sectional study conducted among undergraduate nursing students in the Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka. The University of Peradeniya is one of the conventional universities in Sri Lanka that offers a Bachelor of Science in Nursing degree to students who are selected for the university after completing their advanced level education.

2.2. Study participants

All nursing students studying at the Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya were included in the study. Since the degree programme is a four-year degree programme there are students from 1st year to 4th year.

2.3. Study instrument

A self-administered questionnaire was developed following an extensive literature review consisting of variables of socio demographic factors, academic related factors and health related factors.

Socio demographic characteristics such as age, gender, current residence, engagement in part time jobs, involvement in leisure activities, religious activities and social activities were explored. Academic related factors such as year of study, availability of repeat/incomplete subjects to complete, most challenging part of the academic programme and satisfaction with the academic programme were assessed. To assess the health status of the students they were asked to mention whether they have already been diagnosed with any chronic illness/es and mental illness/illnesses. Furthermore, they were asked to rate their self-perceived physical health and mental health based on a five-point scale ranging from very bad to very good.

Mental Health Continuum short form (MHC-SF) was used to assess the level of positive mental health among students [9]. It consists of 14 items derived from the long form (MHC-LF), which consists of 40 items. These 14 items were chosen as the most prototypical items which represent all three dimensions of positive mental health, emotional, psychological and social well-being [9]. Those 14 items were scored between 0 and 5, with the total score on the scale range from 0 to 70 points. It categorizes the level of positive mental health of an individual into three categories: flourishing, moderate and languishing. To be diagnosed with flourishing mental health, individuals must experience 'every day' or 'almost every day' at least one of the three signs of hedonic well-being and at least six of the eleven signs of positive functioning during the past month. Individuals who exhibit low levels (i.e., 'never' or 'once or twice' during the past month) on at least one measure of hedonic well-being and low levels on at least six measures of positive functioning are diagnosed with languishing mental health. Individuals who are neither flourishing nor languishing are diagnosed with moderate mental health. Furthermore, it measures emotional, psychological, and social well-being as well. Three items represent emotional well-being, six items represent psychological well-being, and five items represent social well-being. This scale has been used in worldwide including United States, Netherland, Italy, South Africa, Korea and China. Nevertheless, it has not been used in Sri Lanka to assess the level of positive mental health. Therefore, the content and the acceptability in the local context were judgmentally validated with the experts in the field of psychiatry in Sri Lanka. Four experts were involved in the validation process. CVI was calculated and it was 1. The panelists reached a consensus regarding the adoption of all items on the instrument, deemed the use of it suitable within the local context and confirmed the suitability of the terminology employed. Furthermore, Cronbach alpha was calculated to measure the reliability of the questionnaire. Cronbach alpha of 0.963 indicated an excellent internal consistency of this instrument.

2.4. Pretesting of the questionnaire

Pretesting of the study instrument was done to check the understandability and comprehensiveness of the questionnaire among ten

Table 1
Socio-demographic characteristics, physical and mental health, and academic related characteristics of the study participants.

Characteristic	Number (n)	Percentage (%)
Socio-demographic characteristics		
Age		
20–23	95	55.9
24–27	74	43.5
Sex		
Male	45	26.5
Female	125	73.5
Religion		
Buddhism	138	81.2
Hindu	22	12.9
Catholic	5	2.9
Islamic	5	2.9
Current residence		
Hostel	144	84.7
Boarding house	7	4.1
Home	19	11.2
Engage in part time jobs		
Yes	22	12.9
No	148	87.1
Involvement in leisure activities		
Yes	132	77.6
No	38	22.4
Involvement in social activities		
Yes	85	50
No	85	50
Involvement in religious activities		
Yes	136	80
No	34	20
Academic related characteristics		
Year of study		
1st year	53	31.2
2nd year	41	24.1
3rd year	45	26.5
4th year	31	18.2
Whether the student has repeat subjects/incomplete subjects		
Yes	47	27.6
No	123	72.4
Most challenging part of the academic programme		
Theory component	62	36.5
Practical component	40	23.5
Both	68	40
Satisfaction with the degree programme		
Fully satisfied	15	8.8
Satisfied	110	64.7
Neither satisfied nor Unsatisfied	29	17.1
Unsatisfied	14	8.2
Extremely unsatisfied	2	1.2
Health related characteristics		
Diagnosed with chronic illness/es		
Yes	15	8.8
No	155	91.2
Satisfaction with the physical health		
Very Good	32	18.8
Good	115	67.6
Neither Good or Bad	20	11.8
Bad	2	1.2
Very Bad	1	0.6
Diagnosed with mental illness/es		
Yes	14	8.2
No	156	91.8
Satisfaction with the mental health		
Very Good	33	19.4
Good	72	42.4
Neither Good or Bad	53	31.2
Bad	9	5.3
Very Bad	2	1.2

nursing students with similar characteristics to the study population in another university in Sri Lanka. Based on the results of pre-test amendments were done to finalize the questionnaire.

2.5. Data collection

Data collection was conducted in the month of January 2020. The students who met the inclusion criteria were selected and questionnaires were administered during the period of their study.

2.6. Data analysis

Descriptive statistics (median, mean and SD) were used to describe population characteristics. Nursing students were categorized as flourishing, moderate and languishing according to the level of positive mental health using categorical diagnosis of MHC – SF [9]. Associations between positive mental health and socio demographic factors, health related factors & academic factors were determined by using chi square test. Before using the chi square test, assumptions were checked and as the data in this study fulfilled all the assumptions needed to use the chi square test it was used. The p-value of <0.05 was regarded as statistically significant with 95% confidence interval.

2.7. Ethical considerations

Ethical approval was obtained from the ethics review committee in the Faculty of Allied Health Sciences, University of Peradeniya (Ethical approval number: AHS/ERC/2019/17). Written permission was obtained from the Dean, Faculty of Allied Health Sciences, University of Peradeniya and Head, Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya. Informed written consent was obtained prior to the data collection from each participant. A detailed information sheet and consent form were provided to each of them. The objectives of the study were explained, and enough time was provided to take the decision to participate or not in this study. The anonymity of the participants was always guaranteed.

3. Results

At the time of data collection 185 nursing students were studying at the department and out of them 170 participated, giving a response rate of 91.8%.

3.1. Socio- demographic characteristics

The total sample consisted of 170 students and of them 73.5% ($n = 125$) were female. Age ranged from 20 years to 27 years and mean age was 23.46 years ($SD = 1.27$). Majority of them (81.2%, $n = 138$) were Buddhists and 80% ($n = 136$) were participating in religious activities.

University hostel was the current residential facility of 84.7%, $n = 144$ students and 12.9%, $n = 22$ were engaged any part time job.

Half of the study sample (50%, $n = 85$) were participating in social activities and 77.6% ($n = 132$) were participating in leisure activities. Majority of them (95.9%, $n = 163$) responded as they have a good relationship with their friends.

3.2. Physical and mental health

From the study sample 8.8% ($n = 15$) were diagnosed with any chronic disease/es and majority of them (67.6%, $n = 115$) perceived their physical health status as good. Eight point two (8.2%, $n = 14$) were already diagnosed with any mental illness/es and 42.4% ($n = 72$) perceived their mental health status as good.

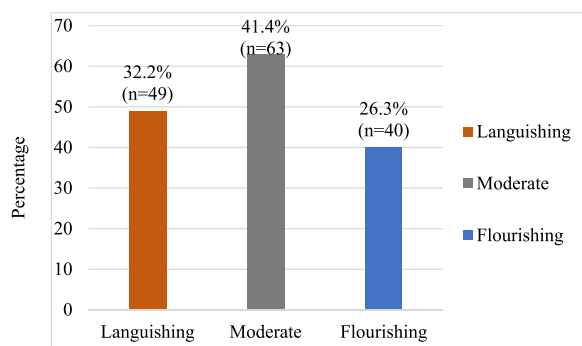


Fig. 1. Levels of positive mental health among the participants.

3.3. Academic related characteristics

Of them 31.2% (n = 53) 1st years, 24.1% (n = 41) 2nd years, 26.5% (n = 45) 3rd years and 18.2% (n = 31) were 4th years. Nearly three quarters (27.6%, n = 47) of them had repeated subjects to complete before the next year of study.

Thirty-six point five (36.5%, n = 62) perceived the theory component of the academic program as the most challenging part while 23.5% (n = 40) perceived the practical component as the most challenging part. Around 40% (n = 68) of the students perceived both components to be challenging (Table 1).

3.4. Levels of positive mental health among participants

Forty-one-point four percent (41.4%, n = 63) had a moderate level of positive mental health. A flourishing level of mental health was found in 26.3% (n = 40) students and a languishing level of mental health was found in 32.2% (n = 49) students (Fig. 1).

3.5. Sub-scale scores for positive mental health among participants

Emotional wellbeing of the participants ranged from 0 to 15 with a mean value of 7.71 (SD = 4.1). Psychological wellbeing ranged from 0 to 22 with a mean value of 9.32 (SD = 5.5). Mean value of the social wellbeing was 14.9 (SD = 8) and it ranged from 0 to 30 (Table 2).

Association between the levels of positive mental health and socio-demographic, academic related and health related characteristics.

Statistically significant association was observed between the level of positive mental health and involvement with leisure activities or social activities. Higher proportion of students who participated in leisure activities ($p = 0.04$) and social activities ($p = 0.008$) flourished more than others. None of the academic related factors studied in this study were significantly associated with the levels of positive mental health among students.

Students who have already been diagnosed with chronic illness/es ($p = 0.021$), mental illness/es ($p = 0.013$) and with a family member with severe illness/es ($p = 0.007$) were significantly languished than other students (Table 3).

4. Discussion

This study was designed to determine the level of positive mental health and associated factors among nursing students in a public university in Sri Lanka. Compared with research examining mental health problems, such as depression, anxiety and stress, fewer studies have addressed positive mental health of an individual in all over the world. To the best of our knowledge this is the first study examining the level of positive mental health among a group of nursing students. Nevertheless, studies done in other countries to assess the happiness among nursing students found that nursing students have a good state of happiness while it was affected by different factors [18,19]. The findings of the present study showed nearly one fourth of students flourished and 32.7% languished. The proportion of students who languished was higher than the proportion of students who flourished. Previous studies done in the same study setting found that the prevalence of the symptoms of depression, anxiety and stress was higher among nursing students [12,20]. Although the study populations were different since the studies conducted in different years, consistency of these similar findings emphasize the urgent need of appropriate interventions to promote the mental health of nursing students in this population.

Furthermore, the present study found that a higher proportion of students who participated in leisure activities and social activities flourished than others. This finding is in line with the findings of other studies as higher levels of social and leisure activity engagement are associated with less perceived depression, better self-rated health and higher quality of life [21,22]. Several other studies in the field of mental health also proved that participation in leisure activities is linked to low levels of anxiety and depression [23–26].

Present study further found that the students who have already been diagnosed with chronic illness/es, mental illness/es and with a family member with severe illness/es significantly languished than other students. Similar to this finding, a study done in Korea found that the own health status and family health were associated with the happiness level among nursing students [18,27,28]. The results of another happiness concept based study also indicated that physical health status of the student as a significant contributing factor of students happiness [19].

Although none of the academic related factors studied in this study were not associated with the levels of positive mental health among students' studies focused on the effect of academic related factors on the level of mental health found a significant proportion of nursing students experience academic related stress in their student life [29–31].

Table 2
Sub-scale scores for positive mental health among participants.

Sub scale	Mean score	Std. Dev.	Minimum	Maximum
Emotional wellbeing	7.71	4.1	0	15
Psychological wellbeing	9.32	5.5	0	22
Social wellbeing	14.9	8.0	0	30

Table 3

Association between the levels of positive mental health and socio-demographic, academic related and health related characteristics.

Variable	Languishing n (%)	Moderate n (%)	Flourishing n (%)	X^2	P value
Age (Years)				4.14	0.126
20–23	29 (31.9)	33 (36.3)	29 (31.9)		
24–27	20 (32.8)	30 (49.2)	11 (18)		
Sex				1.79	0.407
Male	10 (26.3)	15 (39.5)	13 (34.2)		
Female	39 (34.2)	48 (42.1)	27 (23.7)		
Engage in part time jobs				1.59	0.450
Yes	4 (20)	10 (50)	6 (30)		
No	45 (34.1)	53 (40.2)	34 (25.8)		
Involvement in leisure activities				6.45	0.04*
Yes	36 (30.3)	46 (38.7)	37 (31.1)		
No	13 (39.4)	17 (51.5)	3 (9.1)		
Involvement in social activities				9.54	0.008*
Yes	17 (23)	30 (40.5)	27 (36.5)		
No	32 (41)	33 (42.3)	13 (16.7)		
Involvement in religious activities				0.74	0.691
Yes	41 (33.9)	49 (40.5)	31 (25.6)		
No	8 (25.8)	14 (45.2)	9 (29)		
Academic related characteristics				7.17	0.306
Year of study					
1st year	15 (28.3)	19 (35.8)	19 (35.8)		
2nd year	15 (39.5)	13 (34.2)	10 (26.3)		
3rd year	11 (31.4)	19 (54.3)	5 (14.3)		
4th year	8 (30.8)	12 (46.2)	6 (23.1)		
Whether the student has repeat subjects/incomplete subjects				1.63	0.443
Yes	9 (25)	18 (50)	9 (25)		
No	40 (34.5)	45 (38.8)	31 (26.7)		
Most challenging part of the academic programme				6.023	0.197
Theory component	23 (40.4)	17 (29.8)	17 (29.8)		
Practical component	7 (21.9)	16 (50)	9 (28.1)		
Both	19 (30.2)	30 (47.6)	14 (22.2)		
Health related characteristics				7.67	0.021*
Diagnosed with chronic illness/es					
Yes	7 (53.8)	4 (30.8)	2 (15.4)		
No	28 (20.3)	62 (44.9)	48 (34.8)		
Diagnosed with mental illness/es				8.64	0.013*
Yes	6 (42.9)	5 (35.7)	3 (21.4)		
No	15 (12.7)	56 (47.5)	47 (39.8)		
Family member with severe illness/es				9.84	0.007*
Yes	14 (51.8)	12 (44.4)	1 (3.7)		
No	35 (28.5)	51 (41.5)	37 (30.1)		

4.1. Strengths and limitations

This study was the first to assess the level of positive mental health among nursing students in Sri Lanka. Therefore, the novelty of the study is considered as the major strength. The response rate of 91.8% is considered a very good comparison with other studies. Study used a well-structured culturally and judgmentally validated questionnaire to collect data in this study. Calculated Cronbach alpha showed an excellent internal consistency of the study instrument.

There were several limitations in this study. Since the design of this study was cross sectional the direction of the associations could not be explored. Data was collected from one undergraduate nursing program in a selected university in Sri Lanka. There may be unique features specific to the setting and the program that influence respondents' level of positive mental health. Therefore, findings cannot be generalized to other settings. The small sample size of this study may also affect the generalizability of the findings.

5. Conclusion

In conclusion, this study indicates that the proportion of students with languished mental health is higher than the proportion of students with flourished mental health. Involvement in leisure activities, social activities, status of physical and mental health and family member health status were associated with the level of positive mental health in this study. Since a considerable proportion of students languished in order to improve the positive mental health of this student population, proper mental health promotion programmes should be implemented considering the different characteristics associated with the positive mental health.

Author contribution statement

H.M.R.K.G. Nandasena; P.T.S. Prasanga; Conceived and designed the experiments; Performed the experiments; Analyzed and

interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

A.M.M.P. Atapattu: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The authors gratefully acknowledge all the students participated in this study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2023.e18838>.

References

- [1] M. Slade, Mental illness and well-being: the central importance of positive psychology and recovery approaches, *BMC Health Serv. Res.* 10 (1) (2010) 1–14.
- [2] Keyes, C.L.J.S.i.r., Subjective well-being in mental health and human development research worldwide: an introduction, *Soc. Indic. Res.* 77 (2006) 1–10.
- [3] Cloninger, C.R.J.W.p., The science of well-being: an integrated approach to mental health and its disorders, *World Psychiatr.* 5 (2) (2006) 71.
- [4] Keyes, C.L.J.J.o.h. and s behavior, *The Mental Health Continuum: from Languishing to Flourishing in Life*, 2002, pp. 207–222.
- [5] H. Gilmour, *Positive Mental Health and Mental Illness*, Statistics Canada, Ottawa, ON, Canada, 2014.
- [6] P. Fusar-Poli, et al., What is good mental health? A scoping review, *Eur. Neuropsychopharmacol* 31 (2020) 33–46.
- [7] C.L. Keyes, S.S. Dhingra, E.J. Simoes, Change in level of positive mental health as a predictor of future risk of mental illness, *Am. J. Publ. Health* 100 (12) (2010) 2366–2371.
- [8] G.E.J.W.P. Vaillant, Positive mental health: is there a cross-cultural definition? *World Psychiatr.* 11 (2) (2012) 93–99.
- [9] C.L. Keyes, S.J. Lopez, Toward a science of mental health, *Oxford Handbook Posit. Psychol.* 2 (2009) 89–95.
- [10] A. McGrath, N. Reid, J. Boore, Occupational stress in nursing, *Int. J. Nurs. Stud.* 40 (5) (2003) 555–565.
- [11] A. Alzayat, E.J.I.N.R. Al-Gamal, A review of the literature regarding stress among nursing students during their clinical education, *Int. Nurs. Rev.* 61 (3) (2014) 406–415.
- [12] Damayanthi, H.J.L.J.o.S. and R. Publications, Perceived stressors among undergraduate nursing students, University of Peradeniya, Sri Lanka, *Int. J. Scientif. Res. Publicat.* 4 (6) (2014) 1–4.
- [13] J. Liu, et al., Stress and coping styles among nursing students during the initial period of the clinical practicum: a cross-section study, *Int. J. Nurs. Sci.* 9 (2) (2022) 222–229.
- [14] E. Hwang, J.J.B.M.E. Kim, Factors affecting academic burnout of nursing students according to clinical practice experience, *BMC Med. Educ.* 22 (1) (2022) 346.
- [15] H. Ma, et al., Perceived stress, coping style and burnout of Chinese nursing students in late-stage clinical practice: a cross-sectional study, *Nurse Educ. Pract.* 62 (2022), 103385.
- [16] L.-N. Kong, et al., Prevalence and Associated Factors of Burnout Among Nursing Students: A Systematic Review and Meta-Analysis, 2022, 105706.
- [17] L. Picco, et al., Positive mental health among health professionals working at a psychiatric hospital, *PLoS One* 12 (6) (2017), e0178359.
- [18] W. Jun, M.J.J.o.p. Jo, m.h. nursing, Factor affecting happiness among nursing students in South Korea, *J. Psychiatr. Ment. Health Nurs.* 23 (6–7) (2016) 419–426.
- [19] Z. Khosrojerdi, et al., Predictors of happiness among Iranian nurses, *Int. J. Nursing Sci.* 5 (3) (2018) 281–286.
- [20] S. Rathnayake, J.J.I.J.o.C.S. Ekanayaka, Depression, anxiety, and stress among undergraduate nursing students in a public university in Sri Lanka, *Int. J. Caring Sci.* 9 (3) (2016) 1020–1032.
- [21] S.M. Ghasemnegad, et al., Studying the relationship between leisure time activities and depression in nursing students, *J. Pure Appl. Microbiol.* 10 (4) (2016) 3213–3219.
- [22] M. Luo, et al., Social engagement pattern, health behaviors and subjective well-being of older adults: an international perspective using WHO-SAGE survey data, *BMC Publ. Health* 20 (1) (2020) 1–10.
- [23] M.P. Ponde, V.S.J.J.o.l.r. Santana, Participation in leisure activities: is it a protective factor for women's mental health? *J. Leisure Res.* 32 (4) (2000) 457–472.
- [24] J. Kim, et al., Benefits of leisure activities for health and life satisfaction among western migrants, *Annals of Leisure Res.* 21 (1) (2018) 47–57.
- [25] B.L. Driver, P.J. Brown, G.L. Peterson, Benefits of leisure, in: *Preliminary Drafts of the Chapters in This Volume Were Presented at a Workshop of the Authors in Snowbird, Venture Publishing, Utah, 1991, May 1989.*
- [26] K.J.P. Siegenthaler, Recreation, Health benefits of leisure. Research update, *Parks Recreat.* 32 (1) (1997).
- [27] T.J. Sharif, et al., Happiness and its relationship with job burnout in nurses of educational hospitals in Tabriz, Iran, *Int. J. Commun. Based Nursing Midwifery* 8 (4) (2020) 295.
- [28] M.-J. Jo, The factors related to happiness among nursing students, *J. Korean Acad. Societ. Nursing Educat.* 22 (2) (2016) 182–190.
- [29] R.A. Pandey, H.J.K.U.m.j. Chalise, Self-esteem and academic stress among nursing students, *Kathmandu Univ. Med. J.* 13 (4) (2015) 298–302.
- [30] F. Pulido-Criollo, J. Cueto-Escobedo, G. Guillén-Ruiz, Stress in nursing university students and mental health, in: *Health and Academic Achievement*, 2018 (IntechOpen).
- [31] Y. Jee, et al., Factors influencing mental health among nursing students, *J. Korea Academia-Indust. Cooperat. Societ.* 14 (8) (2013) 3866–3875.