

## Research Article

# Mental Health and Well-Being of University Students in Okinawa

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Received 4 September 2018; Accepted 11 November 2018; Published 3 December 2018

Academic Editor: Eddie Denessen

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With increasing frequency and severity of mental health issues among university students globally as well as limited studies on the mental health of Japanese university students, this study examined the factors that impact the mental health issues of university students in Okinawa. A total of 441 undergraduate students from 3 universities participated in this cross-sectional study. Average age of participants was 20 (*range* = 18–46, *SD* = 2.6). Four factors that significantly predicted depression among university students in Okinawa included self-esteem, family economic status, resiliency, and year in school ( $R^2 = 0.37$ ). Two factors that significantly predicted anxiety included self-esteem and family economic status ( $R^2 = 0.26$ ). Three factors that significantly predicted stress included self-esteem, family economic status, and year in school ( $R^2 = 0.28$ ). This study contributes to the understanding of specific factors that impact depression, anxiety, and stress for this population. University administrators and faculty have an opportunity to implement programs and services to make positive impact that could reduce mental health problems and improve well-being for students on their campuses.

## 1. Introduction

The universal and increasingly competitive nature of higher education has exacerbated common academic stressors which contribute to mental health issues among university students [1, 2]. Studies have shown that stressors related to meeting institutional and sociocultural expectations, maintaining study hours, and fulfilling tuition costs were causes of concern for depression, anxiety, and stress in university student populations [1–3]. Recent meta-analyses found that Asian university students who studied nursing and medicine are experiencing a high prevalence of depression, 43% [4] and 11% [5], respectively.

Other studies have found correlation between low socioeconomic status and depression [6, 7]. Chen et al. [8] explains that the increased distinction between low-status and high-status populations may disrupt individual self-esteem and degrade collective self-esteem among lower income families, contributing to increased depression rates in these populations. University students with a low socioeconomic status may be forced to compete for limited

scholarships or take on an additional role in the workforce which elevates their vulnerability to anxiety, stress, or depression [9]. These stressors put university students at risk of chronic sleep deprivation and poor sleep quality—symptoms associated with depression and anxiety in multiple studies [2,10–12]. It has been evident in multiple countries that stress, anxiety, and depression have progressively worsened as university students move along to the second, third, and fourth years of their studies [1, 3, 9].

Depression, anxiety, and stress have been shown to be correlated to poor academic performances, signifying a self-perpetuating disadvantage for students suffering from these mental health issues [13, 14]. A study among American undergraduate students found that depressed students obtained GPA score which was almost half a point lower than nondepressed students [14]. However, self-esteem has been used as a buffer for these mental health issues and demonstrated a positive relationship with student performances [1, 15]. Beiter et al. [1] found that low self-esteem had a strong correlation with perceived stress among university students, influencing their susceptibility to lower academic

performance. Another study found that high academic self-concept—defined as the individuals' understanding of their own academic ability—correlated with a higher GPA [16]. Both studies provided insights on how an individual's self-perception can influence both performance and vulnerability to stressors.

Among a sample of Chinese first year university students, high resilience, defined as one's ability to manage adversity, has been used as a buffer against mental health issues [17], corresponding to similar results among U.S. students [15]. Increasing resilience and stress coping skills can counteract the negative perceptions that increase the risk of suicidal tendencies amongst at-risk Asian university students [18]. Saito and Okayasu [19] identified the impact social skills have on stress coping and resilience, emphasizing the importance of teaching social skills to improve mental health. Peer mentorship, wellness dialogue groups, and student organizations provide opportunities for university students to improve their social skills, thus increasing their resilience and stress management that help mitigate mental health issues [19, 20]. Heightened awareness of mental health issues facing university students has also demonstrated positive effects. Sharing information through group talk and brochures regarding mental health issues have been demonstrated to be beneficial in improving the psychological well-being of university students [20].

## 2. Mental Health in Japan

Although university students face similar academic stressors globally, Japanese university students are uniquely impacted by the high prevalence of depression and anxiety among the national population [21]. The World Health Organization declared Japan to have the second highest number of cases for depressive and anxiety disorders, with over 5 million and 3 million cases, respectively [21]. With 41% of suicides relating to mental health, the high prevalence of mental health issues has led Japan to have higher suicide rates than any other developed country and contribute to suicide's status as the leading cause of death amongst the 20 to 29 years old in Japan [21–24]. Depression and anxiety diagnoses increased during the 2005–2015 period, and the prevalence of depression and anxiety among university student population is a contributing factor to the spread of these mental health issues [21, 25]. With only 1 out of 5 people in Japan receiving proper treatments for mental disorders, it has become increasing concern to better understand the mental health issues among the university student population in Japan [21, 26].

As a collectivistic culture, the Japanese emphasize group harmony and define themselves based on their social ties [27, 28]. Individuals are expected to positively represent their social groups, contributing to minimized recognition of mental health issues in the public realm and a fear that affected individuals may taint their reputation or that of their social affiliates. A study of 4,130 Japanese participants from 11 different communities most commonly reported that the reason for not obtaining help for psychological distress was their desire to take care of the issues on their own [29]. The

intent to handle mental health issues in private reflects the negative perception of the concept of mental health in addition to its diagnosis in Japan. Japanese individuals have difficulties in expressing their emotional state, prompting individuals to employ somatic symptoms to indicate psychological distress [30]. Japanese anthropologists believe that ideas, feelings, and emotions lie within the abdomen; hence, those suffering from depression have commonly reported abdominal pain, along with neck pain and headaches in order to divert their emotional distress into physical symptoms, resulting in roughly 50% of missed cases [30]. Data comparing American and Japanese patients diagnosed with depression have shown that 27% of Japanese patients reported only physical symptoms in comparison to the 9% of Americans [30]. The discrepancy of symptoms for depression between Japan and the U.S. showcases the cultural influence on defining mental health while highlighting the potential errors in diagnoses using generalized mental health questionnaires [30].

### 2.1. Differences between Okinawa and Other Prefectures.

Similar to the discrepancy across cultures, prefectural differences in mental health distribution across different geographical regions are also present in the Japanese society. Secluded from mainland Japan, Okinawa has a unique history which impacts the population and culture of the island's residents. Following the installation of American military bases on the island in 1945, the population of American residents within Okinawa has increased [31]. Geographically, Okinawa is in closer proximity to China in comparison to the rest of Japan. This has allowed for Confucianism, a cultural and spiritual force in mainland China, to more directly influence the island's localized cultural sphere [31]. An interdependent self-construal, a term used to describe individuals that define themselves based on their relationship with others, is a characteristic demonstrated in Confucian societies [31]. The interdependent self-construal was present in more university students in Okinawa in comparison to the students in Kyoto and Auckland, demonstrating the significance of interdependence among university students in Okinawa while indicating a distinction in the population between the two Japanese prefectures [31]. Furthermore, the high prevalence of interdependent self-construal among university students in Okinawa illustrates a higher interrelatedness among the island's residents. Because the island is smaller in size and cultural scale, opportunities to develop interdependent relationships may be more abundant than in metropolitan cities like Kyoto and Auckland [31]. Additionally, the presence of American residents and soldiers in Okinawa contributes to the local population's sensitivity and awareness to issues affecting both private and public interdependent relationships between communities [31]. Local culture in Okinawa and social realms may have broadened the populations' acceptance of cultural and societal diversity. Geographic separation from the mainland may also optimize a stronger bond among local residents. Both their acceptance of cultural and societal diversity, along with the secluded

nature of the island, encourage people in Okinawa to provide the social support needed to decrease the vulnerability to mental health issues among this population.

Minimal literature is available on university students in Okinawa, but statistics involving the general population of Okinawa illustrated a fairly low income in comparison to the majority of Japan, ranking 12<sup>th</sup> highest number of households living on welfare out of the 47 prefectures [32]. Additionally, Okinawa had the highest percentage of unemployment rate throughout all of Japan, exemplifying a trend of lower socioeconomic status within this particular population [32]. Previous studies conducted on university students across the globe have found a negative correlation between low socioeconomic status and depression, anxiety, and stress [6, 7]. However, the number of major depressive disorders within Okinawa was on the lower end of the spectrum in comparison to other parts of Japan, indicating a contradictory trend among the people in Okinawa [32]. Additionally, the mental health of the overall population in Okinawa was considered 12<sup>th</sup> best in Japan while suicide rates in Okinawa were considered slightly above average in comparison to other prefectures of Japan [23, 32]. The extremely high prevalence of depression and other mental health issues in Japan in comparison to the lower rates in Okinawa suggest the importance in better understanding the distinctions that lie between Okinawa and mainland Japan. Further studies on this particular population may potentially identify key characteristics that correlate with the mental health issues faced by university students in Okinawa.

**2.2. Justification.** Despite the commonalities observed regarding the mental health of university students across the globe, the generalization of these evidences cannot be made of a geographically and culturally diverse population like people in Okinawa. Instead, specific research studies must be conducted to more thoroughly understand the issues.

The present study aims to fill the gap within the minimal literature by examining the mental health and well-being of university students in Okinawa. Trends regarding correlations between variables such as socioeconomic status and mental health were not seen among the overall population of Okinawa based on the minimal information on the statistics of Okinawa in comparison to other parts of Japan. Therefore, the purpose of the current study is to identify the mental health issues amongst the Okinawa university student population by identifying variables that impact depression, stress, and anxiety.

### 3. Materials and Methods

**3.1. Procedures and Participants.** After ethics approval was obtained, this cross-sectional study was conducted at three universities in Okinawa. There were a total of 441 undergraduate student participants. Paper-based surveys were distributed in the classrooms and students who volunteered for the study completed the anonymous survey in approximately 20 minutes.

The average age of participants was 20 (*range* = 18–46, *SD* = 2.6). There were 302 (68.5%) female and 138 (31.3%) male. The undergraduate participants included 180 (40.8%) first year students, 157 (35.6%) second year students, 27 (6.1%) third year students, and 77 (17.5%) fourth year students. Family economic status was reported to be very good (7.3%), good (16.3%), average (59.2%), poor (15.2%), and very poor (1.4%). Majority (72.6%) of the students reported growing up in the city and the rest (23.6%) reported growing up in the village or rural areas. Self-reported grades were 147 ((33.3%) mainly A's), 197 ((44.7%) mainly B's), and 77 ((17.5%) mainly C's). Students' religious backgrounds were no religion (78.7%), Buddhism (6.3%), Christianity (3.9%), Islam (0.7%), and other religions (2.5%).

The main academic problem reported by 33% of the participants was frustration with schoolwork. Other academic problems included poor grades (6%), not meeting parents' expectations (5%), and financial issues (4%). When encountering problems, the main person that participants talk to is a friend (54%), followed by their mother (41%), sibling (7%), teacher (6%), and father (5%).

#### 3.2. Measures

**3.2.1. Depression, Anxiety, Stress.** The Japanese version of the Depression, Anxiety, Stress Scale (DASS-42) was used to assess the levels of depression, anxiety, and stress [33]. This scale had 42 items (14 items per subscale) that ranged from 0 (did not apply to me at all) to 3 (applied to me most of the time). Higher score indicated higher symptoms. For this study, Cronbach's alpha was 0.92, 0.88, and 0.91 for the Depression, Anxiety, and Stress subscales, respectively.

**3.2.2. Self-Esteem.** The Japanese version of the Rosenberg Self-Esteem Scale was used to assess the level of self-esteem [34]. This scale had 10 items that ranged from 1 (disagree) to 4 (agree). Higher score indicated higher self-esteem. Cronbach's alpha of the Rosenberg Self-Esteem Scale for this study was 0.84.

**3.2.3. Resiliency.** The Japanese version of the Connor-Davidson Resilience Scale (CD-RISC-25) was used to assess the level of resiliency [35]. This scale had 25 items that ranged from 0 (not true at all) to 4 (true nearly all the time). Higher score indicated higher resiliency. Cronbach's alpha of the CD-RISC-25 for this study was 0.95.

**3.3. Statistical Analyses.** All statistical analyses were completed with IBM SPSS Statistics for Windows Version 24. Significant level was set to 0.05 for analyses. There were no significant differences in gender, university attended, and place of upbringing when the levels of depression, anxiety, or stress were compared. Family economic status was coded with higher number as lower status (1 = very good, 2 = good, 3 = average, 4 = poor, 5 = very poor).

## 4. Results

The means, standard deviations, and correlations of measured variables are displayed in Table 1. Self-esteem, resiliency, and family economic status were significantly correlated with each of the mental health variable.

To further examine the impact of the variables in predicting mental health outcomes, multiple regression analyses were conducted. Results indicated that self-esteem and family economic status were significant predictors for depression, anxiety, and stress. More specifically, as displayed in Table 2, four factors that significantly predicted depression among university students in Okinawa included self-esteem, family economic status, resiliency, and year in school ( $R^2 = 0.37$ ). Two factors that significantly predicted anxiety included self-esteem and family economic status ( $R^2 = 0.26$ ). Three factors that significantly predicted stress included self-esteem, family economic status, and year in school ( $R^2 = 0.28$ ).

## 5. Discussion

The present study aimed to identify factors that impact depression, anxiety, and stress among university students in Okinawa. Using a multiple regression analyses, the study found that self-esteem, resiliency, familial economic standing, and years in school were variables with significant impact on depression, anxiety, and stress.

As expected, self-esteem among university students in Okinawa demonstrated significant negative relationships with the mental health issues measured, confirming the results of previous study that found that higher self-esteem was associated with lower levels of depression, anxiety, and stress [1]. Similar to self-esteem, family economic status also impacted depression, anxiety, and stress. Results indicated that university students from lower economic status households have higher levels of depression, anxiety, and stress, paralleling the results of previous studies in other countries [6, 8, 36–39]. Overall socioeconomic development in Okinawa is homogeneously low, nourishing an environment in which social comparison is mitigated in the absence of public social stratification. This cultivates higher levels of overall self-esteem which correlate with the low prevalence of major depressive disorders in Okinawa as a whole. Negative correlations found between family economic status and depression, anxiety, and stress within the present study suggest that the distinctive experiences among university campuses may be of reason for these contrasting results. University students from lower family economic status households often encounter additional challenges including limited financial resources, higher work hours compared with peers, inadequate academic preparation, lack of family support for the academic pursuit, and other family problems that obligate their time and attention.

For the present study, a student's years in school had a positive correlation for depression and stress, while resiliency showed negative relationships with depression. Previous studies have identified that the number of years in school impact depression, anxiety, and stress. More

specifically, mental health has been shown to deteriorate as university students moved from the first to final years of their academic careers [1, 3]. Saito and Okayasu [19] found that high resilience was associated with high social skills and that social skills had a stronger impact on depression in comparison to resilience. Social skills have also been identified to improve stress coping strategies [19]. The presence of social anxiety symptoms amongst the Japanese population may contribute to their limited social skills, thus leading to a generally lower ability of coping with stress.

Students in Japan begin experiencing the stressors of getting into the school of their choice at a younger age, as high schools in Japan require students to take an entrance exam similar to those employed for tertiary schooling [40, 41]. Entrance exams, among other academic stressors, have been the leading source of mental health issues among university students. The standardization of entrance exams for both high schools and universities—coupled with a stringent national curriculum for Japanese schools nationwide—reiterates a perception that the Japanese educational system does not accommodate individual learning needs that each student may possess [41, 42]. With only 33% of students passing the entrance exam, leaving 100,000 students who are not admitted to universities [43], the pressures to be academically successful negatively impact the mental health of both high school and university students.

Additionally, the higher prevalence of depression and stress among students further in their education exemplifies the impact of Japan's employment strategies. Japanese employers provide added pressures by basing employment on educational prestige [42]. Under these circumstances, a student's educational level is simultaneously a major determinant of individual self-worth, societal approval, and employment viability [40, 42]. This public and professional environment exacerbates academic stresses endemic to the final phases of collegiate careers and contributes to depression, anxiety, and reduced self-esteem [42, 44]. Hence, the significance of resources to better prepare students for entrance exams and transitions postgraduation, and coping with mental burden tied to these academic stressors, is apparent.

*5.1. Implications.* There are some recommendations to help improve the mental health of university students in Okinawa. Workshops and seminars that inform both high school and university students about preparation strategies and productive habits for standardized tests, job interviews, study efforts, time management, stress coping skills, and resume building may be beneficial. Administering these resources at both the secondary and tertiary educational level will reinforce the necessary skills for students to better adapt to the transitions of academic workload throughout the years. If effectively applied, they can also alleviate the anxiety of upper level universities students who are beginning to formulate their professional lives and careers, while giving them the resources to maintain healthy psychological well-being.

Additionally, having a comprehensive wellness program on the university campus could provide support and reduce mental health issues among the students. There are several

TABLE 1: Means, standard deviations, and correlations of measured variables.

	M (SD)	2	3	4	5	6	7
1. Depression	6.06 (7.16)	0.79***	0.79***	-0.59***	-0.45***	0.27***	0.12*
2. Anxiety	6.21 (6.55)	—	0.81***	-0.48***	-0.31***	0.29***	0.06
3. Stress	7.42 (7.30)		—	-0.49***	-0.31***	0.29***	0.14**
4. Self-esteem	25.54 (5.80)			—	0.60***	-0.27***	-0.07
5. Resiliency	56.16 (18.59)				—	-0.13**	-0.09
6. Family economic status	2.87 (0.81)					—	0.06
7. Year in school	2.00 (1.08)						—

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

TABLE 2: Multiple regression analyses of variables predicting mental health outcomes.

Variables	$R^2$	$R^2$	$F$	$df$	Adjusted			
					$B$	$SE$	Beta	$t$
<i>For depression</i>								
Model	0.37	0.37	60.71***	(4, 412)				
Self-esteem					-0.573	0.063	-0.459	-9.039***
Resiliency					-0.056	0.019	-0.144	-2.910**
Family economic					1.104	0.368	0.122	2.998**
Year in school					0.514	0.260	0.078	1.979*
<i>For anxiety</i>								
Model	0.26	0.26	73.38***	(2, 424)				
Self-esteem					-0.494	0.050	-0.434	-9.974***
Family economic					1.401	0.356	0.171	3.934***
<i>For stress</i>								
Model	0.27	0.28	53.12***	(3, 424)				
Self-esteem					-0.549	0.054	-0.436	-10.088***
Family economic					1.477	0.391	0.163	3.774***
Year in school					0.714	0.279	0.107	2.558*

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

wellness program models available. A possible wellness program that could be beneficial for university students in Okinawa is one that includes: Health and Mental Health Awareness Days; Family and Support Systems; Brochure Distribution; Wellness Dialogue Groups; Peer Mentorship; and Student Clubs and Organizations [20]. These six wellness program components could help increase awareness of mental health issues in self and others, improve self-esteem, increase connection, reduce isolation, increase resources, improve coping, and increase support from others.

5.2. *Limitations.* Limitations for this study include the possible response bias due to the use of self-report survey. Additionally, only a few demographic factors and psychosocial variables were examined. A recent meta-analysis demonstrated that year 1 students had the highest rates of depression and rates of depression, then gradually decreased at the final year [11]. In this study, the relationship between year of study and the prevalence of depression was not examined. Also, data were not collected on the specific faculty, discipline, or department of the participant. This study focused on depression, anxiety, and stress but did not address some of the common mental health problems (e.g., Internet addiction). A recent meta-analysis reported that 30% of university students pursuing medicine suffered from Internet addiction [45]. Future research should further

explore these factors along with additional variables such as social skills, social support, and other family issues.

## 6. Conclusion

With limited studies on the mental health of university students in Okinawa, this study contributes to the understanding of specific factors that impact depression, anxiety, and stress for this population. With increasing frequency and severity of mental health issues among university students globally, administrators and faculty have growing opportunities to reduce mental health problems and improve well-being for students on their campuses. University students have the potential to become the future leaders of their cities, the nations, and global societies. Improving the condition and maintenance of their psychological well-being can elevate their academic performance and success in future careers.

## Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

## Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

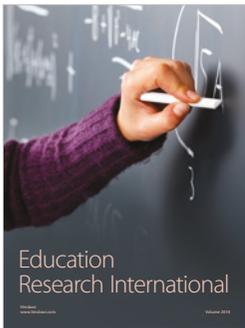
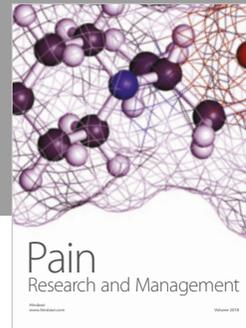
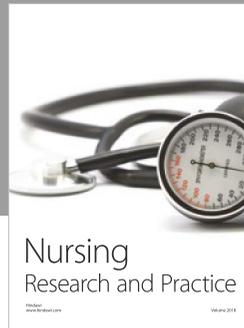
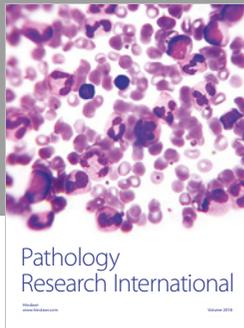
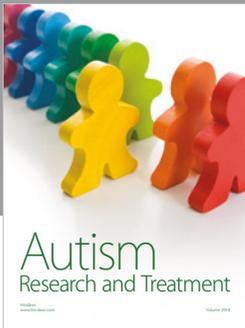
## Acknowledgments

This research project is partially funded by the California State University, Long Beach–College of Education (Small Faculty Grant), and the Uruma Fund for the Promotion of Science (Grants-in-Aid).

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