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A Scientometric Study on Depression among University Students in East Asia: Research and System Insufficiencies?

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Abstract: Given that mental health issues are acute in Asian countries, particularly Japan and Korea, and university students are more vulnerable to depression than the general population, this study aims to examine the landscapes of scientific research regarding depressive disorders among university students and evaluate the effectiveness of international collaboration and funding provision on the scientific impact in Korea, Japan, and China. Based on articles retrieved from the Web of Science database during the period 1992–2018, we found that the number of scientific publications, international collaborations, and allocated funds regarding depressive disorder among university students in China (97 articles, 43 international collaborations, and 52 funds provided, respectively) overwhelmingly surpassed the case of Korea (37 articles, 12 international collaborations, and 15 funds provided, respectively) and Japan (24 articles, 5 international collaborations, and 6 funds provided, respectively). The differences in collaboration patterns (p-value < 0.05) and the proportion of allocated funds (p-value < 0.05) among Korea, Japan, and China were also noted using Fisher's exact test. Based on the Poisson regression analysis, China's associations of scientific impact with international collaboration ($\beta = -0.322$, p-value < 0.01) and funding provision ($\beta = -0.397$, p-value < 0.01) are negative, while associations of the scientific impact and scientific quality with funding provision and international collaboration were statistically insignificant. These findings hint that Korea and Japan lacked scientific output, diversity in research targets, international collaboration, and funding provision, compared to China, but the quality of either China's internationally collaborated or funded articles was contentious. As a result, policymakers in Korea and Japan are suggested to raise the importance of mental health problems in their future policy planning and resource distribution. Moreover, it would be advisable to establish a rigorous system of evaluation for the quality of internationally collaborated and funded studies in order to increase scientific impact and maintain public trust, especially in China.

Keywords: depressive disorder; university student; scientific output; international collaboration; funding; Korea; Japan; China; scientific impact; scientific quality

1. Introduction

There are more than 1.8 billion young people between the ages of 10 and 24 today, which makes our current young generation the largest ever in history [1]. These are the people who will, in time, grow into the role of "the real owners of Agenda 2030 for Sustainable Development" [2]. Young people are expected to become critical thinkers and innovators, driving factors contributing to the resilience of the community and improving human living quality as well as the health of the planet. For them to be able to take on these future tasks as independent, self-sustaining adults, the youth needs not only education but also protection and support in various aspects of their development.

Healthcare is one such aspect, of which mental health care is becoming a more and more pressing issue. Since 2012, when the use of social media became common, the rate of depression among adolescents has risen significantly. It is also reported that the prevalence of the depressive disorder among university students is 30.6%, which is substantially higher than in the general population [3]. A depressive disorder is a common mental illness that currently affects an estimated more than 300 million people around the world. In 2008, WHO listed depressive disorder as the third cause of burden disease and projected that it would become the most substantial cause of burden disease in 2030. Not only is depressive disorder detected as a predictor for many chronic diseases and medical comorbidity [4,5], it is also a strong determinant of suicidal thoughts, self-harming behaviors, and death in many populations [6–8]. As a result, the demand to tackle depressive disorder among adolescents has been critical. With a vision towards improving global mental health and endorsing the sustainable development, in a recent Commission on Global Mental Health and Sustainable Development by *The Lancet* [9], protecting mental health by public policies, additional financial investment, and enhancing research and innovation have been listed as some of the major approaches [10].

An understanding of the state of current research (including scientific output, international collaboration, and funding allocation) regarding depressive disorder among university students is thus necessary to protect the young generation and contribute to the sustainable public health system. Still, few studies related to this issue have been done. Apart from a few bibliometric and scientometric studies on depressive disorder with biological treatments, comorbidity of pain, and artificial intelligence [10–12], no studies have specifically focused on depressive disorder among university students. The current scientometric study aims to fill this gap by examining the publication trends, patterns of collaboration, and funding situations of studies related to depressive disorder among university students in three Asian countries: South Korea, Japan, and China.

There are several reasons for the selection of these countries. Korea, Japan, and China were all among the top 10 countries for scientific research in 2018, according to *Nature Index* [13]. Nonetheless, South Korea and Japan are reported to obtain fewer citations and produce fewer publications than the world average in terms of mental health research [14]. Apart from low scientific production and impact, South Korea and Japan also had the highest and seventh-highest suicide rates among OECD countries in 2017 with 24.6 and 15.2 per 100,000 persons, respectively [15]. Recent news in Japan reported that Japanese people in their 20s accounted for the second-largest share of people seeking advice through the governmental consultation service designed to tackle suicides by young people [16]. Suicide is also the leading cause of death among adolescents in Korea [17]. The deficiencies in scientific works and severity of suicide rates underline the urgent need for a scientometric study regarding depressive disorder among university students in South Korea and Japan. China, with a comparatively lower suicide rate of 9.7 per 100,000 persons in 2016 [18], is selected in this study for comparison purposes, as China, South Korea, and Japan are in the same East Asian cultural sphere.

Given that international collaboration and funding provision are fundamental components of scientific development, besides understanding the current landscapes of the scientific research, identifying the insufficiencies in funding and international collaboration systems might greatly contribute to the advancement of scientific research regarding depression among university students (the primary contributor to the future sustainable development). As a result, the specific research questions in this study are:

- What are the landscapes of scientific research regarding depressive disorder among university students in Japan, Korea, and China?
- What insufficiencies are there in funding and international collaboration systems regarding depressive disorder among university students in Japan, Korea, and China?
- What recommendations can be made for future policy planning to promote scientific development regarding depressive disorder among university students in Japan, Korea, and China?

In the next section, the materials and methods of this study will be thoroughly explained. In the third section, results regarding publication trends, collaborative patterns, funding, and scientific impact will be presented. The results of this studied will eventually be discussed and concluded at the end.

2. Materials and Methods

This study generally follows the structure prescribed by the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. Nonetheless, due to its scientometric nature, several sections in the PRISMA checklist are not suitable for inclusion. The excluded sections are numbers 5, 12–16, and 19–23 in the checklist, which can be addressed in future studies.

2.1. Inclusion and Exclusion Criteria

The current study examined the landscape of research regarding depression among university/college students in Japan, Korea, and China, employing the data downloaded from the Web of Science (WoS) database of Clarivate. Therefore, the inclusion criteria include: (1) Studies conducted in the targeted country (Japan, Korea, and China), (2) studies related to depressive disorder, and (3) studies with university/college students as participants. The exclusion criteria were: (1) Studies that are not research articles, (2) studies after 2018, (3) meta-analysis studies. The meta-analysis study is not directly involved in the data collection from respondents, which is different from the nature of other research articles, such as experimental and observational studies, so we decided not to include a meta-analysis in this study.

2.2. Search Strategy

Articles for this study were retrieved from WOS on 6 August 2019. The WoS database is the most commonly used database by governmental agencies to assess the scientific performance and quality of a nation [19]. The search was restricted to peer-reviewed papers written in English in the Web of Science Core Collection. In other bibliometrics and scientometrics studies regarding depression [10–12], the term "depression" is most commonly selected as a keyword to identify studies related to depression. Given that depression is also called depressive disorder and mood disorder [20], we selected "depression", "depressive disorder", and "mood disorder" as our keywords in this study. In order to target studies on the university/college student population, the term "college student" and "university student" were used. Moreover, as the international student population in university is gaining attention from researchers [21–26], we also include the keyword "international student" in our search queries. The following search queries were employed to search for articles related to depressive disorders among university/college students in three Asian countries: Korea, Japan, and China.

TS = (depression OR depressive disorder OR mood disorder) AND TS = (college student OR university student OR international student) AND TS = Korea TS = (depression OR depressive disorder OR mood disorder) AND TS = (college student OR university student OR international student) AND TS = Japan TS = (depression OR depressive disorder OR mood disorder) AND TS = (college student OR university student OR international student) AND TS = China

2.3. Data Extraction

The extraction and curation of data consist of four steps. First, the data were downloaded from the WOS database in .txt format. The data included all bibliographical information on the articles resulting from the search queries, such as authors, titles, keywords, affiliation, citation, abstract, etc. Second, the data files were curated and converted to the xlsx format using the Bibliometrix package in R [27]. Third, two authors independently screened the title and abstract of all papers to select articles that met inclusion criteria and exclude irrelevant research articles. The results were then cross-checked by two authors, and disagreement was resolved through discussion. Discussions also involved a third author where necessary. Finally, data regarding scientific collaboration patterns and funding sources were extracted by an author, and a second author verified the extracted data.

2.4. Category Classification

To comprehensively understand the current collaboration and funding trends in three studying countries, we classified the collaboration pattern and funding source of each article into several categories based on information displayed in the article.

2.4.1. Scientific Collaboration Patterns

Based on the affiliation section of an article, we classified collaboration types into five main categories:

- Domestic solo paper (**DS**): A paper written by one domestic author
- Foreign solo paper (**FS**): A paper written by one foreign paper
- Domestic collaborative paper (**DC**): Paper co-written by domestic authors
- Foreign collaborative paper (**FC**): Paper co-written by foreign authors
- International collaborative paper (**IC**): Paper co-written by domestic and foreign authors

2.4.2. Funding Sources

Based on the acknowledgment and funding sections of an article, we classified funding sources into eight main categories:

- Central government **(CG)**: Fund provided by the ministry, central-governmental organizations, foundations, departments, or agencies.
- Local government **(LG)**: Fund provided by municipal or provincial organizations, foundations, departments, or agencies.
- Academic institution **(AI)**: Fund provided by the university, college, or educational institutes.
- Business **(B)**: Fund provided by private sectors, such as enterprises, corporations, etc.
- Non-profit organization **(NPO)**: Fund provided by non-profit organizations, foundations, or societies.
- Others **(O)**: Fund provided by other types of organizations.
- Foreign government **(FO-G)**: Fund provided by the foreign ministry, central-governmental organizations, foundations, departments, or agencies
- Foreign non-governmental organization **(FO-NGO)**: Fund provided by non-governmental organizations, foundations, departments, or agencies.

2.5. Statistical Analysis and Procedure

The statistical analysis in this study consists of three tools: Fisher's exact test, Kruskal–Wallis test, and Poisson regression analysis. The Fisher's Exact test was employed to identify the statistically significant difference in the collaboration patterns and funding provision among Korea, Japan, and China, as it is more appropriate for the data type (nominal) and the modest size of the dataset than chi-squared test [28,29]. The Kruskal–Wallis test was utilized to examine the difference in ordinal data among two or more levels in a group [29]. To estimate the associations of scientific impact measured by the number of total citations with international collaboration, funding provision, and the number of co-authors, we utilized the Poisson regression analysis. Poisson regression was developed to cope with count data-dependent variables and non-parametric models [30,31]. The method is thus suitable for the current study since the number of total citations can be considered as count data, and the distributions of the number of total citations among Korea, Japan, and China are skewed.

In this study, two models were examined. Model (1) is estimated without control variable "*Year*", while model (2) is estimated with control variable "*Year*" to diminish the effect of publication time bias on the total number of citations.

$$\log(ToCitation) = \alpha + \beta_1 InterCollab + \beta_2 Funding + \beta_3 Author + e \quad (1)$$

$$\log(ToCitation) = \alpha + \beta_1 InterCollab + \beta_2 Funding + \beta_3 Author + \beta_4 Year + e \quad (2)$$

where,

- *ToCitation* is the dependent variable,
- α is the intercept,
- β_1-β_4 are coefficients,
- *InterCollab*, *Funding*, and *Author* independent variables. Description of dependent and independent variables are explained in Table 1,
- e is the error term.

Table 1. Description of dependent and independent variables.

Variable Type	Variable Name	Data Type	Description
Dependent variable	*ToCitaion*	Ordinal data	The number of times that an article is cited by other papers
	JIF.Lev	Ordinal data	The impact factor level of the journal in which the article was published
Independent variable	*InterCollab*	Binomial data (1 – yes vs. 0 – No)	Whether the article represents an international collaboration or not
	Funding	Binomial data (1 – yes vs. 0 – No)	Whether the article is funded or not
	Author	Continuous data	The number of co-author in the article
Control variable	*Year*	Continuous data	The year in which the article was published

Models (1) and (2) were also applied for the regression against the dependent variable "*JIF.Lev*". Improving scientific impact and research quality are among the main purposes of funding provision and international collaboration promotion. Thus, through examining the association of "*ToCitation*" and "*JIF.Lev*" dependent variables with "*InterCollab*" and "*Funding*" independent variables, the effectiveness of funding provision, and international collaboration in raising scientific impact and scientific quality can be evaluated.

After curating the data using the Bibliometrix R package, the data were downloaded as .xlsx format and then converted to .csv format. The .csv data file was later imported to R software for

Fisher's exact test and Poisson analysis performing Generalized Linear Models (GLMs). Even though there were articles published before 2008 in Korea, Japan, and China, only the data during 2008-2018 were employed in the statistical analysis, because the publication during this period is more robust and influenced more by the policies than the prior period. The R software version 3.6.2, 'Dark and Stormy Night' was used throughout the analysis. We chose $p < 0.05$ as a required statistical significance.

3. Results

3.1. Description of Studies

After retrieving data from the Web of Science Core Collection, 225 studies in China, 87 studies in Korea, and 66 studies in Japan before 2019 were identified. Utilizing the Bibliometrix R package, 15 studies in China, six studies in Korea, and 1 study in Japan that are not research articles were excluded. After that, the remaining articles' titles and abstracts were screened independently by two authors. One hundred twenty-eight studies in China, 44 studies in Korea, and 41 studies in Japan were excluded because they were not related to depression, not about college/university students, and not conducted in the selected country. Eventually, 97 articles in China, 37 articles in Korea, and 24 articles in Japan were eligible for inclusion in the Scientometrics study (see Figure 1).

3.2. Scientific Performance Overview

3.2.1. Publication Growth Trend

The total number of publications from 1992 to 2018 is presented in Figure 2. During the period between 1992 and 2007, the problem regarding depressive disorder among university was not seriously paid attention in China, Korea, and Japan. Even though the problem was studied very early in Korea at the beginning of the 1990s [32], the next study was only conducted after almost a decade [33]. China and Japan started to pay attention to depressive disorders among university students relatively later than Korea in 1999 and 1998, respectively.

Unlike Korea and China, in which the first study was performed by researchers from the USA [32,34], two first studies in Japan were conducted completely by domestic researchers [35,36]. The proportion of articles in China, Korea, and Japan before 2008 only accounted for 7% (8/115), 13% (5/40), and 14% (4/28) of the total publications produced, respectively.

From 2008 to 2018, China, Korea, and Japan experienced significant growth in the number of publications. The percentage of publications produced during this time accounted for 77% (77/115), 80% (32/40), and 71% (20/28) in China, Korea, and Japan, respectively. Notably, the total publications of China were double the summation of total publications in both Japan and Korea. By raising its number of publications by ten folds in the last ten years, China obtained the clearest surge in terms of publication quantity. Compared to China, despite the increase in the total number of publications, the publication growth rates of Korea and Japan have been relatively fluctuating over time.

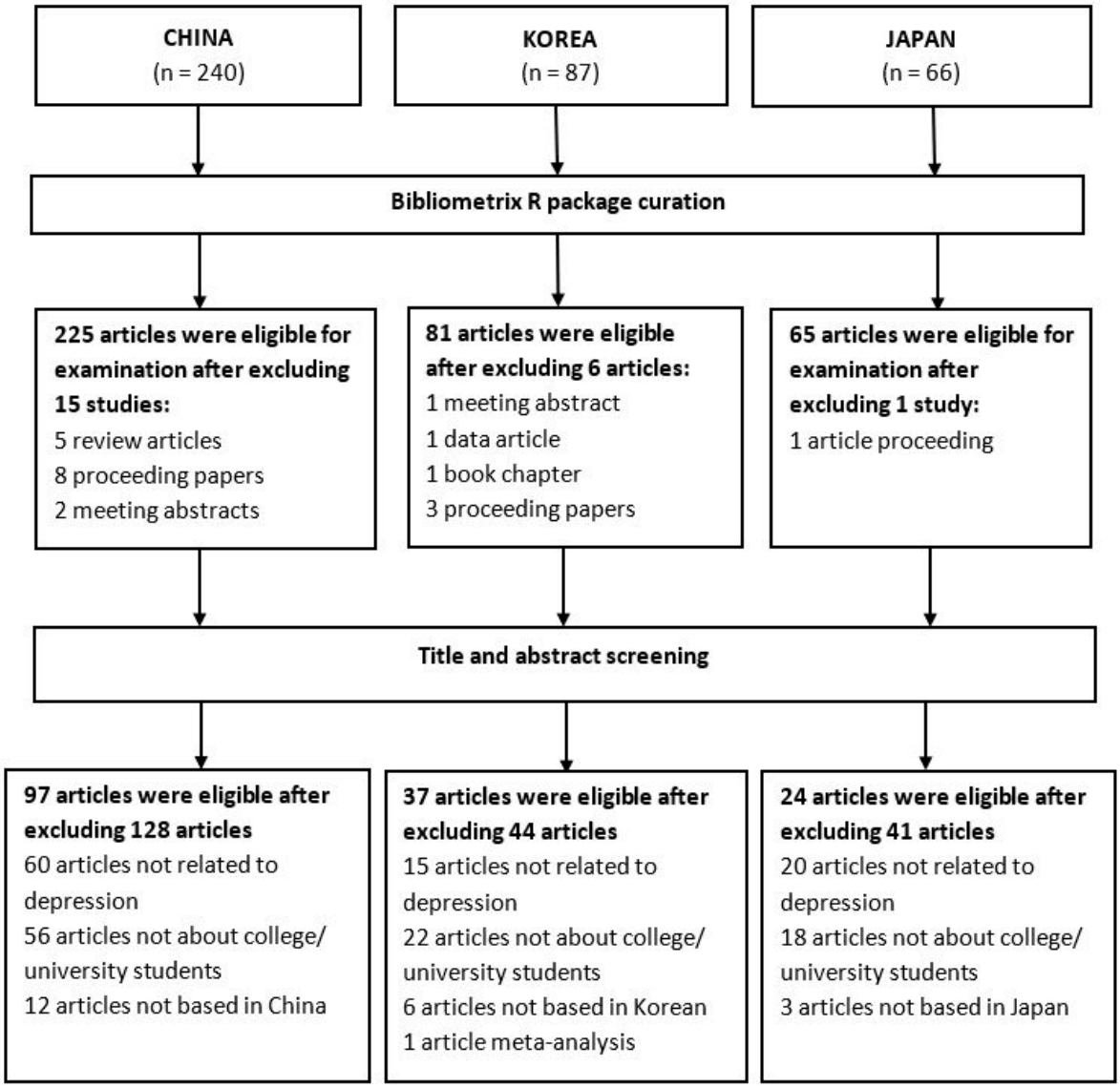


Figure 1. The flow chart for excluding ineligible articles.

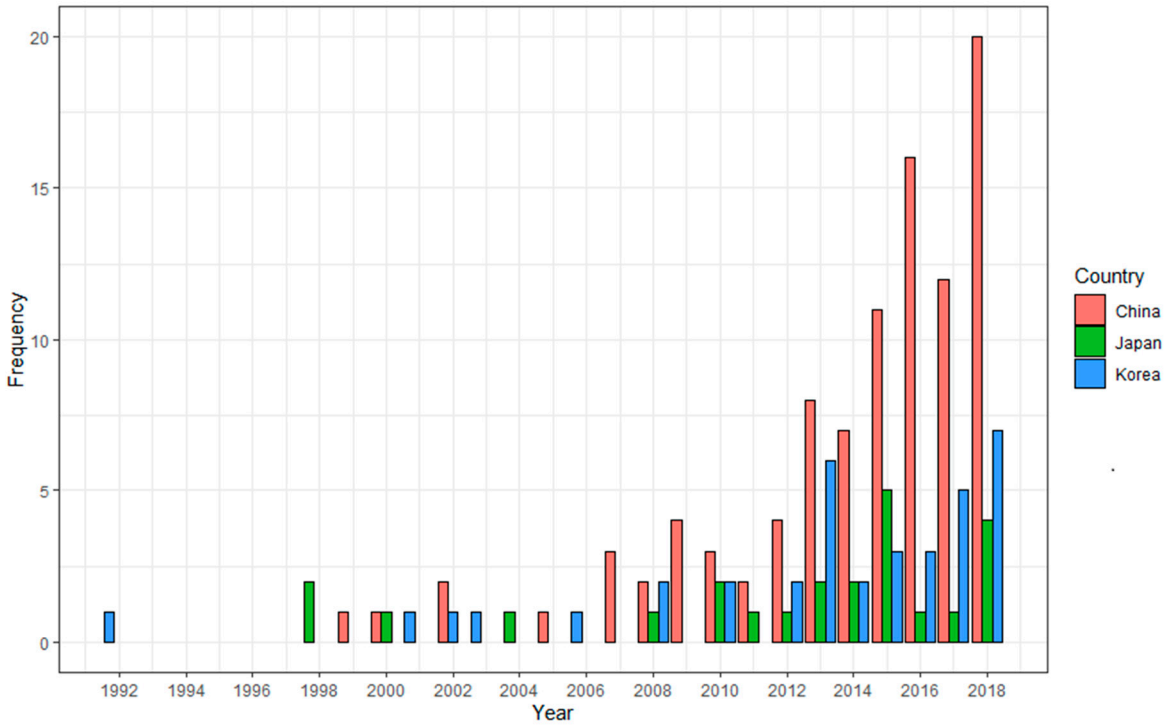


Figure 2. The number of publications from 1992 to 2018.

3.2.2. Research Targets

Figure 3 displays the types of universities, target groups, and sub-group that were studied in China, Korea, and Japan. Common universities were places in which studies regarding depressive disorder among students were most frequently implemented in China (80%), Korea (84%), and Japan (96%). Among the three countries, China had the most diverse research locations. Studies implemented in technical or medical universities in China accounted for 20% of all publications. In contrast, studies in Japan merely focused on students in common universities. Only one study was conducted in medical universities [37].

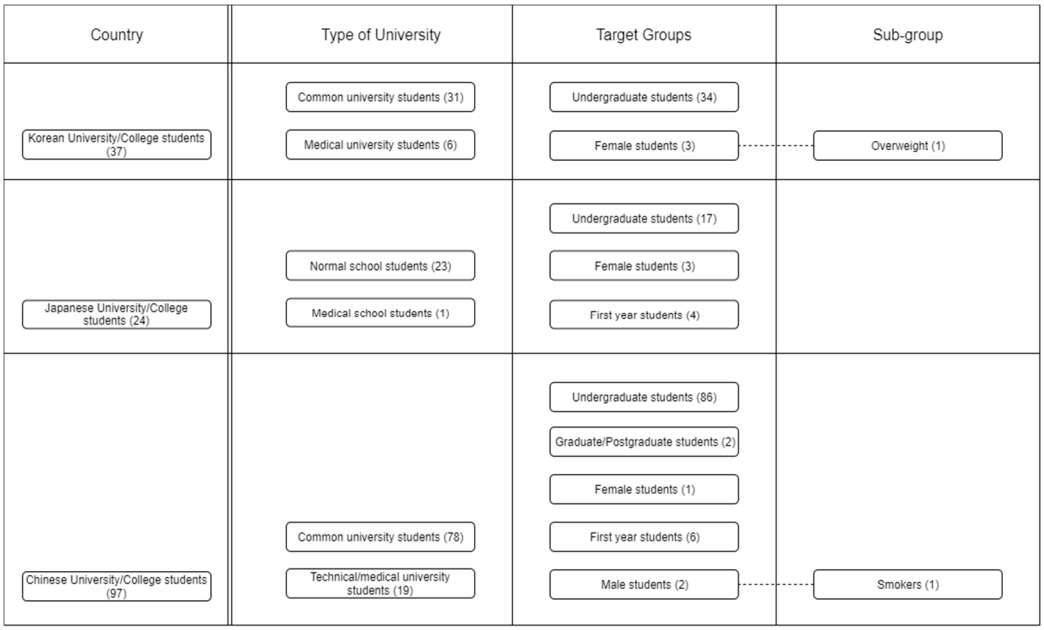


Figure 3. Types of university and target groups.

For the variety of target groups, China was also outstanding compared to its counterparts with five target groups and a sub-group, which was male smokers [38]. The target groups of studies in Japan were more diverse than those in Korea with three different target groups. Although there were only two target groups that were studied in Korea, researchers delved into the character of female students [39].

3.3. Scientific Collaboration Patterns

Until 2018, China obtained the highest percentage of internationally collaborated publications with 44% of its total publications about depressive disorder among university students, while Korea and Japan came after with 32% and 21%, respectively (see Figure 4). Collaboration among domestic researchers was still the most dominant pattern in Japan (50%), Korea (49%), and China (47%). Different from China, in which other types of collaborations besides domestic and international collaborations were limited, Japan acquired a relatively high percentage of papers published solo by a domestic researcher (17%) and a group of purely foreign researchers (13%).

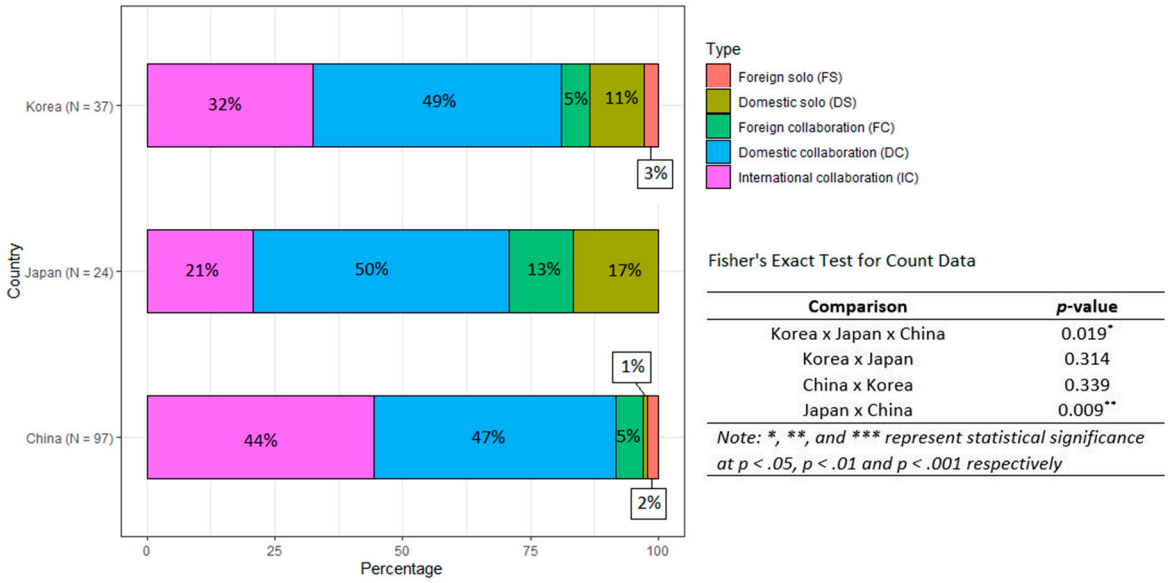


Figure 4. The proportion of collaboration types.

The Fisher exact's test was employed to examine the difference in the proportion of collaboration types among Korea, Japan, and China. The collaboration proportion among Korea, Japan, and China is statistically significantly different at $p < 0.05$. The differences in collaboration type proportion of China–Korea and Korea–Japan were found to be statistically insignificant, while the difference between China and Japan was found to be statistically significant at $p < 0.01$

Figure 5 displays the number of international collaborations in China, Korea, and Japan from 2000 to 2018. As presented, Japan and China were the first countries obtaining papers coauthored internationally in researching depressive disorder among university students. The first article in Korea appeared three years later in 2003. China experienced a substantial hike in the number of international collaborations, and the number peaked in 2016 and 2018 with nine international collaborations. On the contrary, Japan was comparatively not keen on coauthoring internationally, with only five times collaborating with foreign researchers. The number of international collaborations in Korea was rare before 2013, but it became more regular during 2013 and 2017. In 2018, the number of internationally collaborated articles surged with four papers published.

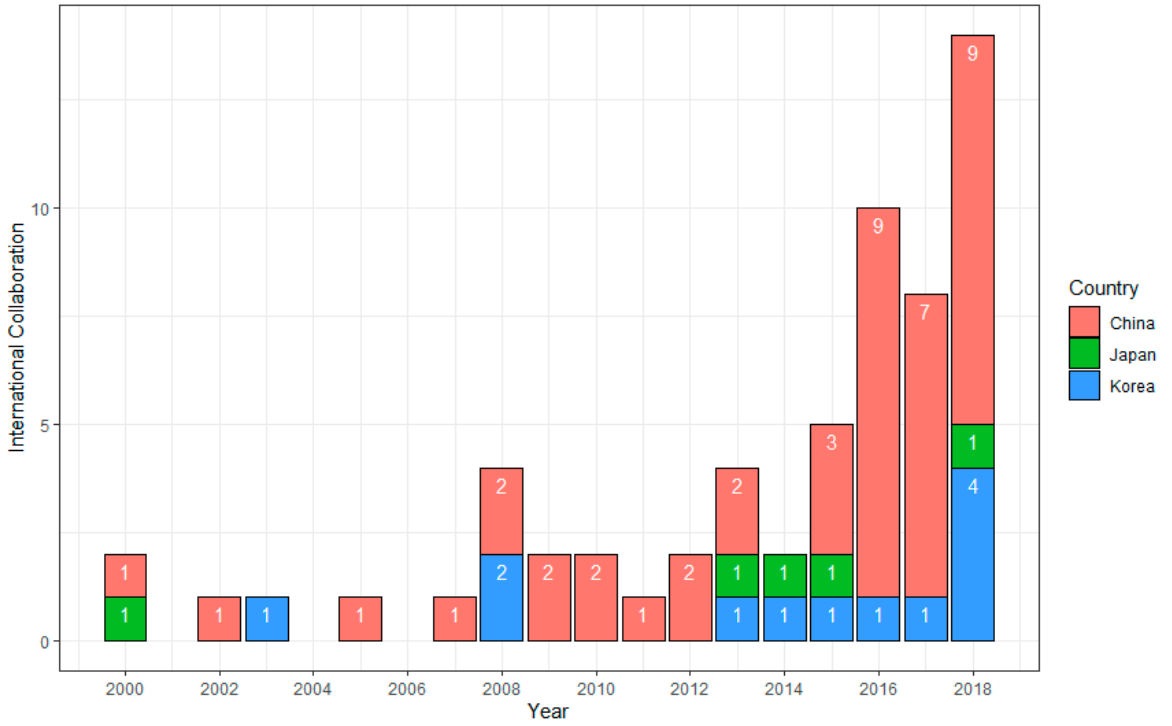


Figure 5. The number of internationally collaborated articles from 2006 to 2018.

The USA was the most frequently collaborated partner of China, Korea, and Japan. In three countries, Korea was the most frequent country to collaborate with the USA with 75% (9/12) of total international collaborations. China and Japan's collaborations with the USA accounted for roughly 63% (27/43) and 60% (3/5) of total internationally collaborated papers. In terms of the variety of partners, China had a broader collaborating network across Asia and Europe than Korea and Japan (see Table A1).

3.4. Funding situation

Research funding in China was relatively more generous and consistent than its counterparts. China had the first funded project in 2007 [40], while Japan and Korea had their first funded projects one year later [34] (see Figure 6). It is noteworthy that the study of Saint Arnault and Kim [41] was the first funded study in Korea and Japan concurrently, and their funding was provided by a foreign government. During the 2007-2018 period, the number of funded projects in China grew significantly and peaked in 2018 at 16 publications. In contrast, after the first funded project in 2008, only five studies in Japan regarding depressive disorder among university students were funded. For Korea, even though funding for research started simultaneously with Japan, the funding was given more frequently than Japan. Only in three years (2009, 2011, and 2014), no funding was granted.

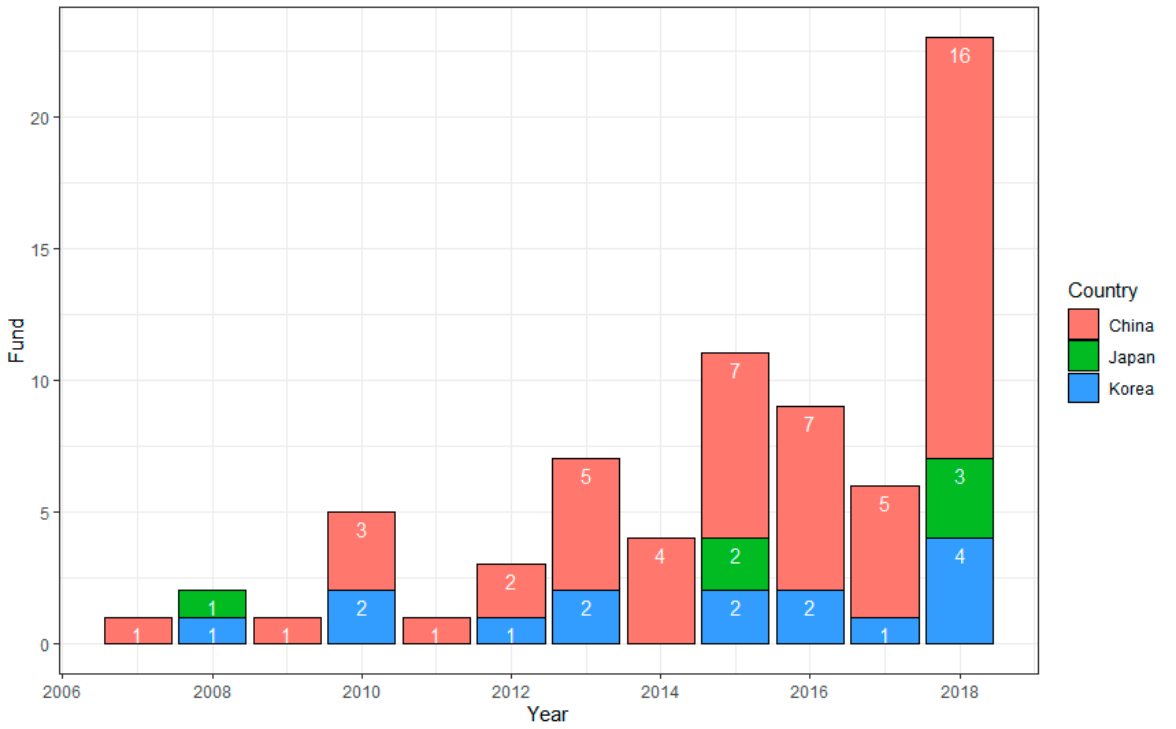
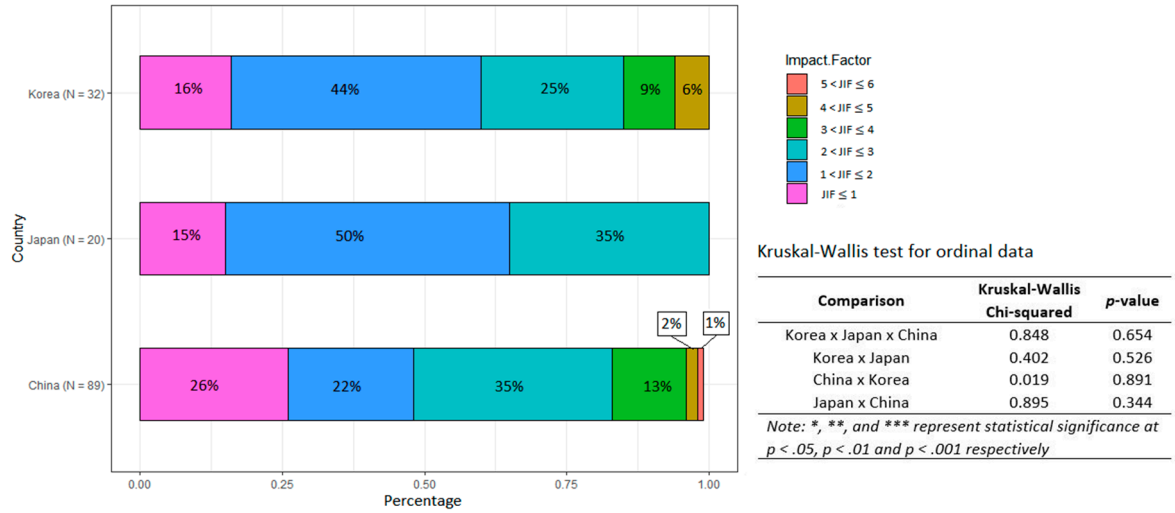


Figure 6. The number of funded projects from 2006 to 2018.

In China, most of the funding was given by the central government (32%) and local government (28%). The third-largest funding contributor was academic institutes with 26% (see Figure 7). The local and central governments played important roles in funding provision in China, but in Japan and Korea, only the central government's funds were provided. In Korea, academic institutes (44%) contributed more substantially than governmental agencies (37%) in funding provided to studies related to depressive disorder among university students, 11% of total mentions of funding sources derived from non-profit organizations. In Japan, a major funding source was still governmental organizations (34%), but the role of academic institutes was less significant than the other two counterparts (8%). Studies related to depressive disorder among university students in Japan was considerably dependent on funding from social sources (33%) and foreign sources (25%). It is noted that a study can receive funding from two or more sources, so the share of governmental sources in Japan was fairly low, although the central government had funded four out of six studies in Japan.

Table 2 shows the Fisher's exact test result regarding the difference in the percentage of funds provided and the percentage of government funds provided among Korea, Japan, and China. The results suggest a statistically significant difference between the proportion of funds provided in China and Japan. Interestingly, even though the proportion of funds provided is not different between China and Korea, their proportion of government funds provided is statistically significantly different. In general, the funding proportion and government funding proportion among Korea, Japan, and China were statistically significantly different.



Kruskal-Wallis test for ordinal data

Comparison	Kruskal-Wallis Chi-squared	*p*-value
Korea x Japan x China	0.848	0.654
Korea x Japan	0.402	0.526
China x Korea	0.019	0.891
Japan x China	0.895	0.344

*Note: *, **, and *** represent statistical significance at p < .05, p < .01 and p < .001 respectively*

Figure 7. The proportions of studies according to Journal Impact Factor (JIF) levels among Korea, Japan, and China.

Table 2. Fisher's exact test on funding provision.

Comparison	*p*-Value (Funding Provision)	*p*-Value (Government Funding Provision)
Korea × Japan × China	0.031 *	0.011 *
Korea × Japan	0.260	1
China × Korea	0.408	0.018 *
Japan × China	0.045 *	0.076

Note: *, **, and *** represent statistical significance at $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively. Funding Provision: Receiving fund >< not receiving fund Government Funding Provision: Receiving fund from the government >< not receiving fund from the government.

3.5. Scientific Impact—Number of Citations

To avoid bias from the year of publication that (1) older publications tend to have a higher number of citations and (2) the Journal Impact Factor since the publication time might have changed significantly until 2018, only articles within the last ten years, between 2008 and 2018, were included in this section.

3.5.1. A Brief Overview

Articles related to depressive disorder among university students in China, Korea, and Japan received a relatively small number of citations. From 2008 to 2018, there were merely two articles acquiring citations equal to or greater than 50 in Korea and China, whereas Japan obtained no article (see Table 3). In China, the highest number of times an article was cited was 125 [42], which was double the highest citation an article received in Korea with 63 citations [43] and six times higher than Japan's with 24 citations [44]. Nevertheless, the relative citation indexes of funded and internationally collaborated articles in China were lowest with 0.72 and 0.82, respectively. In the case of Japan, the relative citation index of internationally collaborated papers highlighted the impact of studies with an international corporation. Still, funded articles were less impactful than non-funded articles. The impact of internationally collaborated or funded articles was generally similar to articles without international corporations or funding.

Table 3. Citation during the period 2008–2018.

	Korea	Japan	China
The highest number of citations	63	24	125
Number of highly cited articles (>=50)	2	0	2
Average citation—International collaboration	12.45	9	9.23
Average citation—No international collaboration	12.15	6.81	11.3
Relative citation index [1]	**1.03**	**1.32**	**0.82**
Average citation—Funding	11.93	6.67	9.12
Average citation—No funding	12.56	7.5	12.61
Relative citation index [2]	**0.95**	**0.89**	**0.72**

Relative citation index [1] is defined as the ratio of the average citation of papers that had international collaborations over that of paper having no international collaboration. Relative citation index [2] is defined as the ratio of the average citation of papers that received funding over that of paper having no funding.

The average citations of studies in Korea were relatively higher than those in China and Japan across categories. In contrast, despite a greater relative citation index than China and even Korea in terms of international collaboration, Japan had the lowest average number of citations in all categories.

3.5.2. Journal Impact Factor

We utilized the Journal Impact Factor (JIF) for measuring the quality of scientific research. To identify the JIF of the journal in which a study was published, we referred to the Journal Citation Report (JCR) in 2017, which was used to qualify journals in the WoS database during the time that the data in the current study were retrieved.

Figure 8 illustrates the percentage of studies published in journals with different JIF levels and the results of the Kruskal–Wallis test among Korea, Japan, and China. In Japan, half of the articles were published in journals with $1 < \text{JIF} \leq 2$, and there was no article published in a journal with JIF > 3. Korea obtained 40% of articles published in journals with JIF > 2. 51% of studies published in journals with JIF > 2 made China significantly surpass the other two countries in terms of scientific quality. However, it is notable that China also accounted for a larger percentage of studies published in journals with JIF ≤ 1 than the other two countries. Despite some differences between Korea, Japan, and China, the Kruskal–Wallis test produced statistically insignificant results in all cases: Korea vs. Japan vs. China, China vs. Japan, Japan vs. Korea, and Korea vs. China.

Funded studies in Japan presented the most transparent improvement in scientific quality. No funded studies were published in journals with JIF ≤ 1 (see Table 4). The difference between funded and non-funded studies was also confirmed by a Kruskal–Wallis test (chi-sqr = 3.963 and $p < 0.05$). Korea's funded studies seemed to be published in higher impact factor journals than non-funded studies, 26% of funded studies were published in journals with JIF > 3, while that percentage of non-funded studies was only 6%. Nonetheless, the results provided by Kruskal–Wallis was not statistically significant. As for China, the difference in scientific quality between funded and non-funded articles was ambiguous and statistically insignificant. As for the international collaboration, none of the three countries expressed a clear and statistically significant difference, which hints at the ineffectiveness of the current international collaboration practices of three countries in raising scientific quality (see Table 5).

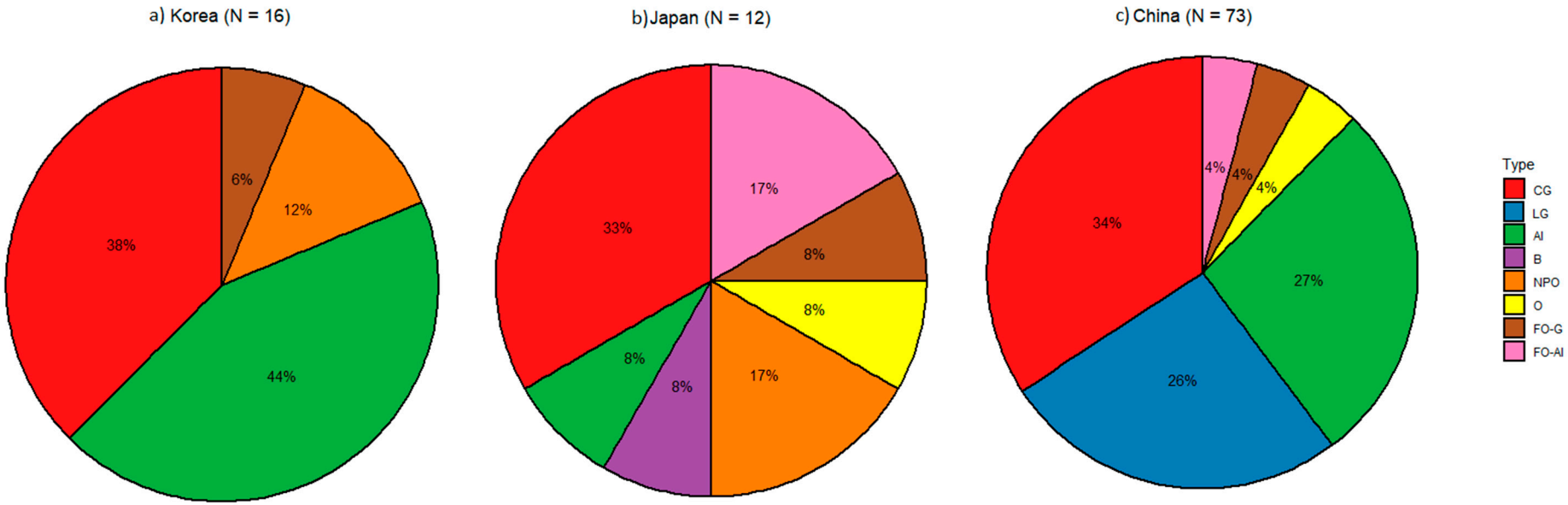


Figure 8. The proportions of funding sources based on the total mentioned sources in (**a**) Korea, (**b**) Japan, and (**c**) China.

Table 4. Percentage of JIF levels by funding provision.

	Korea		**Japan**		**China**	
	Yes (N = 15)	**No (N = 17)**	**Yes (N = 6)**	**No (N = 9)**	**Yes (N = 51)**	**No (N = 38)**
JIF ≤ 1	20%	12%	0%	33%	25%	26%
1 < JIF ≤ 2	27%	59%	33%	33%	20%	26%
2 < JIF ≤ 3	27%	24%	67%	33%	37%	32%
3 < JIF ≤ 4	13%	6%	0%	0%	14%	13%
4 < JIF ≤ 5	13%	0%	0%	0%	2%	3%
5 < JIF ≤ 6	0%	0%	0%	0%	2%	0%
Kruskal–Wallis Chi-squared	1.117		3.963		0.241	
p-value	0.291		0.047		0.623	

Table 5. Percentage of JIF levels by international collaboration.

	Korea		**Japan**		**China**	
	Yes (N = 11)	**No (N = 21)**	**Yes (N = 4)**	**No (N = 16)**	**Yes (N = 39)**	**No (N = 50)**
JIF ≤ 1	9%	19%	0%	19%	23%	28%
1 < JIF ≤ 2	55%	38%	75%	44%	28%	18%
2 < JIF ≤ 3	27%	24%	25%	38%	23%	44%
3 < JIF ≤ 4	9%	10%	0%	0%	18%	10%
4 < JIF ≤ 5	0%	10%	0%	0%	5%	0%
5 < JIF ≤ 6	0%	0%	0%	0%	3%	0%
Kruskal–Wallis Chi-squared	0.028		0.003		0.472	
p-value	0.867		0.959		0.492	

3.6. Poisson Regression Analysis

To assess the effectiveness of international collaboration, funding provision, and the number of co-authors on raising the scientific impact of the research articles during 2008-2018, we regressed three independent variables "*InterCollab*", "*Funding*", and "*Author*" against the dependent variable "*ToCitation*" without control variable "*Year*" (model 1) and with control variable "*Year*" (model 2). Before conducting the regression analysis, we also employed the correlation analysis and found that there was no multicollinearity among independent variables (see Tables A2–A4). The regressed results are shown in Table 6. In Korea, the association between "*InterCollab*" and "*ToCitation*" is not statistically significant, while "*ToCitation*" is statistically positively associated with "*Author*" and statistically negatively associated with "*Funding*". These results hint at the ineffectiveness, or even worse, of international collaboration and funding provision in raising the scientific impact measured by the total citation.

In Japan, the first model suggests the negative associations of "*ToCitation*" with "*InterCollab*" and "*Funding*", even though the associations are not statistically significant. Nonetheless, when "*Year*" is controlled, the associations become positive, although they are still not statistically significant. One point worth mentioning here is the positive impact of the number of co-authors on the scientific impact of the article. Both estimations from the two models show "*InterCollab*" and "*Funding*" are not effective in increasing scientific citations, but "*Author*" is.

Table 6. Poisson regression estimates with "*ToCitation*" as dependent variable.

	Korea				**Japan**				**China**			
Dependent variable	Model (1)		Model (2)		Model (1)		Model (2)		Model (1)		Model (2)	
"*ToCitation*"	β	z value	β	z value	β	z value	β	z value	β	z value	β	z value
"*InterCollab*"	0.079	0.743	−0.001	−0.017	−0.003	−0.015	0.273	1.158	−0.322	−4.720***	−0.516	−7.408***
"*Funding*"	−0.045	−0.424	−0.203	−1.843	−0.230	−1.182	0.016	0.089	−0.397	−5.970***	−0.004	−0.070
"*Author*"	0.038	2.096*	0.060	3.422***	0.094	2.150*	0.122	2.723**	0.053	4.794***	0.023	1.661
"*Year*"			−0.173	−10.399***			−0.209	−6.877***			−0.291	−25.564***
Constant	2.307	21.888***	352.281	10.470***	1.599	7.883***	422.706	6.907***	2.399	30.989***	588.688	25.678***
AIC	730.5		623.4		179.5		133.0		1820.7		1127.7	

Note: *, **, *** represents statistically significance at $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively; Model (1): Year the article was published is not controlled; Model (2): Year the article was not published is controlled.

Table 7. Poisson regression estimates with "*JIF.Lev*" as the dependent variable.

	Korea				**Japan**				**China**			
Dependent variable	Model (1)		Model (2)		Model (1)		Model (2)		Model (1)		Model (2)	
"*JIF.Lev*"	β	z value	β	z value	β	z value	β	z value	β	z value	β	z value
"*InterCollab*"	−0.052	−0.219	−0.004	−0.180	0.017	0.041	0.025	0.057	0.088	0.646	0.086	0.637
"*Funding*"	0.142	0.609	0.124	0.525	0.276	0.837	0.299	0.893	0.031	0.226	0.045	0.329
"*Author*"	0.037	0.975	0.040	1.039	0.010	0.131	0.013	0.171	0.041	1.774	0.039	1.668
"*Year*"			−0.028	−0.751			−0.017	−0.321			−0.018	−0.765
Constant	0.690	2.979**	58.034	0.447	0.647	1.881*	34.987	0.327	0.611	3.483***	37.889	0.777
AIC	107.74		109.18		64.712		66.61		293.4		294.83	

Note: *, **, *** represents statistically significance at $p < 0.05$, $p < 0.01$ and $p < 0.001$ respectively. Model (1): Year the article was published is not controlled. Model (2): Year the article was not published is controlled.

The effectiveness of "*InterCollab*" and "*Funding*" in China is not an improvement compared to the other two countries, rather even worse. The first model indicates statistically significant negative associations of "*ToCitation*" with "*InterCollab*" and "*Funding*" at $p < 0.01$. Even though in the second model, the association between "*ToCitation*" and "*Funding*" turns to be statistically insignificant, the coefficient is still negative. Similar to the other two countries, "*Author*" also possesses a positive association with "*ToCiation*".

As for the regression against the dependent variable "*JIF.Lev*", no statistically significant association was found across three countries (see Table 7). These regression results indicated that neither "*Funding*", "*InterCollab*", nor "*Author*" affected the scientific quality measured by the levels of JIF.

4. Discussion

4.1. Publication Trend

The current study found that there was a sharp increase in the number of articles regarding depressive disorder among university students in Korea during 2008 and 2018, but the growth rate was not stable. The rising number of publications might result from the development of community health service programs in 2007, in which juveniles are the targeted subjects [45]. Our results also showed that the research targets of depressive disorder studies in Korea are not diverse, and no studies on special student groups (e.g., international students, first-year students, post-graduate students, etc.) had been conducted besides few studies on female students. Given the fact that the prevalence and risk factors of depressive disorder were different among types of students [21,22,26], paying more focus on various groups of students is suggested as a way to enhance the effectiveness of depression treatment and prevention services in higher education.

For Japan, findings show that the number of studies regarding depressive disorder among university students in Japan is scarce. There were only 24 articles published until 2018, which was only equal to one-fifth of the total number of publications in China. After 2010, Japan witnessed a positive growing signal in the number of articles. The positive signal might emerge as a consequence of the Mental Health Policy Framing Conference in conjunction with the Ministry of Health, Labor, and Welfare in 2010. The conference accomplished with committees' recommendations to improve health care for children-adolescents and depression [46]. Despite some positive changes, the number of publications in Japan was still inadequate to cope with a relatively high prevalence of depression and suicide rates. This might be because of the shortage of the number of researchers in the mental health of children and adolescents. Only 0.025% of psychiatrists in Japan is certified to treat children and adolescents [47,48]. Besides the inadequate publication number in Japan, the lack of diversity in research targets is also a primary concern that requires more attention from the scientific policy-makers, given the increasing demand of international workforces in Japan [49–52].

In China, we found that even though the first publication emerged in 1999, relatively later than the other two countries, the number of studies related to depressive disorder among university students started to increase more substantially and consistently than Korea and Japan in 2007. With only eight publications by 2007, the number of publications in China had emerged significantly by more than 12 folds to 97 publications by 2018. Not only the publication outcome is improved dramatically, but the diversity in the research topic is also commendable Such impressive changes might be the outcome of the '686 Project' launched in China in 2004. The project's aims are to improve the capacity of the community in mental health prevention, treatment, and management [53,54]. Additionally, endeavors in policy reform of the Chinese government, e.g., Healthy China 2020, Healthy China 2030, National Mental Health Law 2013, etc., should not be excluded.

Overall, some positive changes in terms of publication outcomes are witnessed with the most outstanding performance from China. Such improvements are more or less influenced by the orientation of policymaking in Korea, Japan, and China. Given the acute mental problems adolescents currently suffer from in Japan and Korea, more scientific researches are needed.

4.2. Scientific Collaboration Patterns

The results from Fisher's Exact test show that there is a statistically significant difference in terms of collaboration construction among Korea, Japan, and China. The difference is most significant between China and Japan. However, except for China, the collaboration network in Korea and Japan is narrow and monotonous. Moreover, while the current international collaboration in Korea and Japan is ineffective in raising scientific impact measured by the number of total citations and quality measured by the JIF level, the association between international collaboration and scientific impact in China was statistically significantly negative (see Tables 6 and 7).

In Korea, we found that the three most common patterns of collaboration are collaborating domestically (49%), collaborating internationally (32%), and research conducted alone by a researcher affiliated with a Korean institute (11%). Thanks to the stable number of international cooperations since 2013, the proportion of international collaboration in Korea has become relatively higher than that in Japan, but still lower than in China. A tight scientific cooperation relationship between Korea and the USA, which contributes up to 75% of the total number of mentioned international collaborations, can help boost the number of collaborated projects quickly due to existing collaborating network, but adversely, it can hinder the exchange of diverse knowledge with other scientific communities. Furthermore, the international collaborations during 2008–2018 were also found to be ineffective in increasing the scientific impact of the study. Hence, diversifying the international collaboration network and pre-evaluating the effectiveness of international collaboration is necessary to improve the quality of the research, knowledge exchange, and expand the scientific collaboration network [55–57].

International collaboration is an effective way to increase scientific productivity. However, we found that the international collaboration rate in Japan was relatively low, with only 21%. Most of the studies related to depressive disorder among university students were accomplished by a domestic researcher (17%) and a group of domestic researchers (50%). Another 13% of publications were conducted by a group of foreign researchers. This suggests foreign scientists are willing to learn about the depressive disorder among Japanese university students.

Interestingly, among the top highly-cited papers in Japan, 3 out of 10 papers were written by a group of foreign researchers. Moreover, despite statistical insignificance, the results of Poisson regression analysis hint at the positive influence of international collaboration on scientific impact measured by the total citations. Based on these findings, we recommend policymakers and academic institutes in Japan to promote international collaboration for raising scientific productivity and exchanging knowledge in depressive disorder among Japanese university students [55–57].

In China, we found a considerable contribution from international collaborations in the collaboration pattern with 44%, which is much higher than the other two countries. Also, health promotion is even integrated into the economic and political initiatives of China. In response to the proposition of the Belt and Road Initiative in 2013, China also formed the Health Sub-Alliance of the University Alliance of the Silk Road (UASR-HAS) in 2015 to encourage international collaboration in health-related research and education [58]. Our results of the international collaboration were in line with the time the UASR-HAS was established. Specifically, the international collaborations after 2015 in China accounted for almost 60% (25/43) of the total international collaborations. Nevertheless, the adverse impact of international collaboration on scientific influence was seen. These results might point out the advantages (increase in scientific output) as well as disadvantages (low scientific impact) of integration issues, both political and economic, in scientific collaboration.

Therefore, besides the implementation of international collaboration promotion policies, we recommend governments, especially the Chinese government, initiate an evaluation system for internationally collaborated research to increase scientific impact and public trust [59–61]. Further research regarding the effect of integrating political-economic issues into scientific collaboration on the research quality should be conducted.

4.3. Funding Provision

According to our data, starting in 2008, the amount of funding granted to topics related to depressive disorder among university students in Korea has been relatively steady. Funding was provided every year, with the exception of 2009, 2011, and 2014. This result might also be the evidence of Korea's endeavors in promoting community health service programs for adolescents and response to the Mental Health Action Plan: 2013–2020 of WHO [62]. The plan urges nations to increase funding into community-based services and integrate mental health into general health care settings. The study's result also highlighted the greater contribution of academic institutes (44%) than the central government (37%) in funding provision. Despite the expansion of investment into mental health research and development of central government in Korea, there was a huge disproportion in directing the investment, with only 10% of the budget [63] is spent on studies of mental health policies, services, and humanities and social sciences issues, etc., while another 90% was spent on basic research, therapy, and diagnosis studies. As the depressive level and healthcare usage are significantly affected by multiple social-cultural-economic aspects [25,64–71], such disproportionate distribution of investment might result in insufficient depression prevention and treatment among particular populations, such as university students. Re-allocation of the investment is, therefore, essential to protect the mental health of the young generation.

Despite funding provision being an effective way to increase scientific productivity and attract international collaboration in the Korean case, Japan didn't converge to the same path. Findings revealed that the funding granted for studies of depressive disorder among university students in Japan was quite finite. During the time between 2007 and 2018, only six studies were funded. The central government provided funds to four of those studies (2 in 2015 and 2 in 2018). In 2013, "the previous Healthcare Policy" was approved by the Japanese cabinet for better allocating the medical R&D budget [72]. The budget allocation for studies related to depressive disorder among university students was seemingly not enough to create impactful improvement in depression prevention and treatment services in higher education [73]. Given that funded articles were found to have higher scientific quality than those not funded, and mental health treatment services in Japan are mainly centered on institutional settings, more investment in community- and school-based services, especially scientific activities, are recommended [60,61,74,75].

Efforts to reform mental health care in China are also reflected in its investment in mental health research. Our findings reveal that since 2009, the number of studies related to depressive disorder among university students had been funded more consistently, especially the number of funds granted per year after 2013, accounting for approximately 85% of total funds given, were leveraged compared to the previous period. This is aligned with the implementation of the health care reform in 2009 and the National Mental Health Law in 2013 [76,77]. The law's purposes are to encourage and support scientific research in mental health as well as improve and maintain the psychological well-being of students.

As for the association between the funding provision and scientific impact, China possessed a negative correlation, while Korea and Japan obtained no significant correlation. The negative association between China's funding provision and the scientific impact can be due to the misallocation of research funds, since the decisions for funding may be influenced by extraneous factors, such as social networks or political patronage, besides scientific merits [78]. In addition, no association across countries between funding provision and scientific quality measured by JIF levels was statistically significant. Therefore, along with policies promoting financial support in studies regarding depressive disorder among university students, a proper evaluation system for funded research in three countries, especially China, is also necessary to enhance the scientific influence of the research output and public trust [59–61]. In China, the evaluation system should be focused on government-funded research, while in Korea, funds from institutes need more careful and rigorous evaluation. Additionally, in all three cases, the number of co-authors is positively associated with scientific impact. Given the scientific development regarding depressive disorder among university students in Korea, Japan, and

China is at the initial stage, team-based research should be promoted to improve the outcome's quality and quantity.

4.4. Limitations

The current study has several limitations. First, the total number of citations cannot completely represent the scientific impact, as it may include self-citations, which tends to overstate the real impact of the study. Second, even though we found the ineffectiveness of the current funding provision and international collaboration in raising scientific impact and scientific quality, we could not specify what types of funding and international collaboration are ineffective. Third, employing only the WoS database and including only research articles provide several scientific production biases. For example, a number of Japanese researchers tend to publish in Japanese journals indexed in the CiNii database, and in terms of social sciences research, Japanese researchers prefer to publish in the form of a book than an article. Forth, to some theoretical extent, the total number of citations and the impact factor level can be used to measure scientific impact and scientific quality, but due to the lack of pragmatic data on real-life impacts, such as social responses and treatment effectiveness, the result of this study should only be considered as a point of reference for policymaking. More conclusive findings will emerge in a more comprehensive study.

5. Conclusions

The current scientometric study aims to describe the scientific research situation of depressive disorder among university students and evaluate the effectiveness of international collaboration and funding provision on enhancing scientific impact in Korea, Japan, and China, based on data from the WoS database. Findings reveal that: The research outputs in Korea and Japan are relatively low, and they also lack international collaborations, funding provisions, and diversity in research targets. This result is aligned with the findings from the bibliometric study of Larivière and Grant that Korea and Japan have lower scientific production than the world average [14]. Meanwhile, China's research outputs, number of international collaborations, funding provisions outstand its counterparts.

To some extent, the international collaboration and funding provision in Japan and Korea remain ineffective in raising scientific impact and scientific quality, while the situation is worse in China (the negative associations of the total citations with international collaboration and funding provision).

As the younger generations will be the main contributors to sustainable development in the future, keeping them physically and mentally healthy is like protecting the "root" of sustainable development. Thus, we recommend policymakers in Japan and Korea to promote scientific research regarding mental health among university students through international collaborations, funding provisions, and resource reallocation. It is also necessary to implement an adequate evaluation system for internationally collaborated and funded scientific output, especially in China.

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Appendix A

Table A1. Total mentions of international collaborations by collaborated countries.

Countries	Korea	Japan	China
Singapore	1	1	4
China	1	1	
Taiwan	1	1	1
Korea		1	1
Japan	1		4
UK	1		3
US	9	3	27
Australia	1	1	8
France		1	
Canada			4
Germany			1
Norway			1
New Zealand			1
Malaysia		1	
Total mentions	15	10	55

Table A2. Correlation analysis—Korea.

Korea	*"ToCitation"*	*"JIF.Lev"*	*"Author"*	*"InterCollab"*	*"Fund"*	*"Year"*
"ToCitation"	1					
"JIF.Lev"	0.479	1				
"Author"	0.074	0.314	1			
"InterCollab"	0.025	−0.071	−0.016	1		
"Fund"	0.003	0.234	0.254	−0.020	1	
"Year"	−0.384	−0.194	0.080	0.032	−0.070	1

Table A3. Correlation analysis—Japan.

Japan	*"ToCitation"*	*"JIF.Lev"*	*"Author"*	*"InterCollab"*	*"Fund"*	*"Year"*
"ToCitation"	1					
"JIF.Lev"	0.230	1				
"Author"	0.222	0.189	1			
"InterCollab"	0.136	0.036	0.481	1		
"Fund"	−0.059	0.450	0.233	−0.054	1	
"Year"	−0.612	−0.025	0.183	0.131	0.247	1

Table A4. Correlation analysis—China.

China	*"ToCitation"*	*"JIF.Lev"*	*"Author"*	*"InterCollab"*	*"Fund"*	*"Year"*
"ToCitation"	1					
"JIF.Lev"	0.137	1				
"Author"	0.068	0.272	1			
"InterCollab"	−0.076	0.110	0.078	1		
"Fund"	−0.099	0.058	0.137	−0.061	1	
"Year"	−0.575	−0.128	−0.095	−0.014	0.146	1

References

1. The United Nations Youth and the SDGs. Available online: https://www.un.org/sustainabledevelopment/youth/ (accessed on 15 December 2019).
2. UNCTAD Youth Prioritized as Sustainable Development Innovators. Available online: https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2009 (accessed on 15 December 2019).

3. Ibrahim, A.K.; Kelly, S.J.; Adams, C.E.; Glazebrook, C. A systematic review of studies of depression prevalence in university students. *J. Psychiatr. Res.* **2013**, *47*, 391–400. [CrossRef] [PubMed]
4. Vu, H.T.T.; Nguyen, T.X.; Nguyen, H.T.T.; Le, T.A.; Nguyen, T.N.; Nguyen, A.T.; Nguyen, T.T.H.; Nguyen, H.L.; Nguyen, C.T.; Tran, B.X.; et al. Depressive symptoms among elderly diabetic patients in Vietnam. *DMSO* **2018**, *11*, 659–665. [CrossRef] [PubMed]
5. Vu, T.; Le, T.; Dang, A.; Nguyen, L.; Nguyen, B.; Tran, B.; Latkin, C.; Ho, C.; Ho, R. Socioeconomic vulnerability to depressive symptoms in patients with chronic hepatitis B. *Int. J. Environ. Res. Public Health* **2019**, *16*, 255. [CrossRef]
6. Simon, G.E.; Coleman, K.J.; Rossom, R.C.; Beck, A.; Oliver, M.; Johnson, E.; Whiteside, U.; Operskalski, B.; Penfold, R.B.; Shortreed, S.M.; et al. Risk of suicide attempt and suicide death following completion of the patient health questionnaire depression module in community practice. *J. Clin. Psychiatry* **2016**, *77*, 221–227. [CrossRef]
7. Pan, Y.-J.; Juang, K.-D.; Lu, S.-R.; Chen, S.-P.; Wang, Y.-F.; Fuh, J.-L.; Wang, S.-J. Longitudinal risk factors for suicidal thoughts in depressed and non-depressed young adolescents. *Aust. N. Z. J. Psychiatry* **2017**, *51*, 930–937. [CrossRef]
8. Miller, A.B.; Eisenlohr-Moul, T.; Giletta, M.; Hastings, P.D.; Rudolph, K.D.; Nock, M.K.; Prinstein, M.J. A within-person approach to risk for suicidal ideation and suicidal behavior: Examining the roles of depression, stress, and abuse exposure. *J. Consult. Clin. Psychol.* **2017**, *85*, 712–722. [CrossRef] [PubMed]
9. Jenkins, R. Global mental health and sustainable development 2018. *BJPsych Int.* **2019**, *16*, 34–37. [CrossRef] [PubMed]
10. Tran, B.X.; Ha, G.H.; Vu, G.T.; Nguyen, L.H.; Latkin, C.A.; Nathan, K.; McIntyre, R.S.; Ho, C.S.; Tam, W.W.; Ho, R.C. Indices of change, expectations, and popularity of biological treatments for major depressive disorder between 1988 and 2017: A scientometric analysis. *Int. J. Environ. Res. Public Health* **2019**, *16*, 2255. [CrossRef]
11. Tran, B.X.; McIntyre, R.S.; Latkin, C.A.; Phan, H.T.; Vu, G.T.; Nguyen, H.L.T.; Gwee, K.K.; Ho, C.S.H.; Ho, R.C.M. The current research landscape on the artificial intelligence application in the management of depressive disorders: A bibliometric analysis. *Int. J. Environ. Res. Public Health* **2019**, *16*, 2150. [CrossRef]
12. Wang, X.-Q.; Peng, M.-S.; Weng, L.-M.; Zheng, Y.-L.; Zhang, Z.-J.; Chen, P.-J. Bibliometric study of the comorbidity of pain and depression research. *Neural Plast.* **2019**, *2019*, 1657498. [CrossRef]
13. Nature Index. The Top 10 Countries for Scientific Research in 2018. Available online: https://www.natureindex.com/news-blog/top-ten-countries-research-science-twenty-nineteen (accessed on 15 December 2019).
14. Larivière, V.; Grant, J. Bibliometric analysis of mental health research: 1980–2008. *Rand Health Q.* **2017**, *6*, 12. [PubMed]
15. OECD Suicide Rates. Available online: https://data.oecd.org/healthstat/suicide-rates.htm (accessed on 15 December 2019).
16. Kyodo School Issues are No. 1 Reason behind Youth Suicides in 2018, Japanese Government White Paper. Available online: https://www.japantimes.co.jp/news/2019/07/16/national/social-issues/school-matters-no-1-issue-behind-youth-suicides-2018-japanese-government-white-paper-finds/#.Xfj61mQzZEY (accessed on 18 December 2019).
17. Kwak, C.W.; Ickovics, J.R. Adolescent suicide in South Korea: Risk factors and proposed multi-dimensional solution. *Asian J. Psychiatry* **2019**, *43*, 150–153. [CrossRef] [PubMed]
18. WHO Suicide Rate Estimates, Crude Estimates by Country. Available online: http://apps.who.int/gho/data/view.main.MHSUICIDEv?lang=en (accessed on 15 December 2019).
19. Nguyen, T.V.; Ho-Le, T.P.; Le, U.V. International collaboration in scientific research in Vietnam: An analysis of patterns and impact. *Scientometrics* **2017**, *110*, 1035–1051. [CrossRef]
20. National Institute of Mental Health Depression. Available online: https://www.nimh.nih.gov/health/topics/depression/index.shtml (accessed on 20 January 2020).
21. Nguyen, M.-H.; Serik, M.; Vuong, T.-T.; Ho, M.-T. Internationalization and its discontents: Help-seeking behaviors of students in a multicultural environment regarding acculturative stress and depression. *Sustainability* **2019**, *11*, 1865. [CrossRef]
22. Ogunsanya, M.E.; Bamgbade, B.A.; Thach, A.V.; Sudhapalli, P.; Rascati, K.L. Determinants of health-related quality of life in international graduate students. *Curr. Pharm. Teach. Learn.* **2018**, *10*, 413–422. [CrossRef]

23. Cao, C.; Meng, Q.; Shang, L. How can Chinese international students' host-national contact contribute to social connectedness, social support and reduced prejudice in the mainstream society? Testing a moderated mediation model. *Int. J. Intercult. Relat.* **2018**, *63*, 43–52. [CrossRef]
24. Constantine, M.G.; Okazaki, S.; Utsey, S.O. Self-concealment, social self-efficacy, acculturative stress, and depression in African, Asian, and Latin American international college students. *Am. J. Orthopsychiatry* **2004**, *74*, 230–241. [CrossRef]
25. Nguyen, M.; Le, T.; Meirmanov, S. Depression, acculturative stress, and social connectedness among international university students in Japan: A statistical investigation. *Sustainability* **2019**, *11*, 878. [CrossRef]
26. Nguyen, M.-H.; Ho, M.-T.; Nguyen, Q.-Y.T.; Vuong, Q.-H. A dataset of students' mental health and help-seeking behaviors in a multicultural environment. *Data* **2019**, *4*, 124. [CrossRef]
27. Aria, M.; Cuccurullo, C. Bibliometrix: An R-tool for comprehensive science mapping analysis. *J. Informetr.* **2017**, *11*, 959–975. [CrossRef]
28. Kim, H.-Y. Statistical notes for clinical researchers: Chi-squared test and Fisher's exact test. *Restor. Dent. Endod.* **2017**, *42*, 152. [CrossRef] [PubMed]
29. McDonald, J.H. *Handbook of Biological Statistics*, 3rd ed.; Sparky House Publishing: Baltimore, MD, USA, 2014.
30. Coxe, S.; West, S.G.; Aiken, L.S. The analysis of count data: A gentle introduction to Poisson regression and its alternatives. *J. Personal. Assess.* **2009**, *91*, 121–136. [CrossRef] [PubMed]
31. Hutchinson, M.K.; Holtman, M.C. Analysis of count data using Poisson regression. *Res. Nurs. Health* **2005**, *28*, 408–418. [CrossRef] [PubMed]
32. Crittenden, K.S.; Fugita, S.S.; Bae, H.; Lamug, C.B.; Un, C. A cross-cultural study of self-report depressive symptoms among college students. *J. Cross-Cult. Psychol.* **1992**, *23*, 163–178. [CrossRef]
33. Kim, O. Sex differences in social support, loneliness, and depression among Korean college students. *Psychol. Rep.* **2001**, *88*, 521–526. [CrossRef]
34. Anderson, C.A. Attributional style, depression, and loneliness: A cross-cultural comparison of American and Chinese students. *Personal. Soc. Psychol. Bull.* **1999**, *25*, 482–499. [CrossRef]
35. Sakamoto, S. The effects of self-focus on negative mood among depressed and nondepressed Japanese students. *J. Soc. Psychol.* **1998**, *138*, 514–523. [CrossRef]
36. Sakamoto, S.; Kambara, M. A longitudinal study of the relationship between attributional style, life events, and depression in Japanese undergraduates. *J. Soc. Psychol.* **1998**, *138*, 229–240. [CrossRef]
37. Takayama, Y.; Miura, E.; Miura, K.; Ono, S.; Ohkubo, C. Condition of depressive symptoms among Japanese dental students. *Odontology* **2011**, *99*, 179–187. [CrossRef]
38. Cai, L.; Xu, F.; Cheng, Q.; Zhan, J.; Xie, T.; Ye, Y.; Xiong, S.; McCarthy, K.; He, Q. Social smoking and mental health among Chinese male college students. *Am. J. Health Promot.* **2017**, *31*, 226–231. [CrossRef]
39. Kim, Y.-R.; Hwang, B.I.; Lee, G.Y.; Kim, K.H.; Kim, M.; Kim, K.K.; Treasure, J. Determinants of binge eating disorder among normal weight and overweight female college students in Korea. *Eat. Weight Disord. Stud. Anorex. Bulim. Obes.* **2018**, *23*, 849–860. [CrossRef] [PubMed]
40. Liu, C.; Xie, B.; Chou, C.-P.; Koprowski, C.; Zhou, D.; Palmer, P.; Sun, P.; Guo, Q.; Duan, L.; Sun, X.; et al. Perceived stress, depression and food consumption frequency in the college students of China seven cities. *Physiol. Behav.* **2007**, *92*, 748–754. [CrossRef] [PubMed]
41. Saint Arnault, D.; Kim, O. Is there an Asian idiom of distress? *Arch. Psychiatr. Nurs.* **2008**, *22*, 27–38. [CrossRef] [PubMed]
42. Ni, X.; Yan, H.; Chen, S.; Liu, Z. Factors influencing internet addiction in a sample of freshmen university students in China. *Cyberpsychol. Behav.* **2009**, *12*, 327–330. [CrossRef] [PubMed]
43. Song, Y.; Lindquist, R. Effects of mindfulness-based stress reduction on depression, anxiety, stress and mindfulness in Korean nursing students. *Nurse Educ. Today* **2015**, *35*, 86–90. [CrossRef] [PubMed]
44. Igarashi, H.; Hasui, C.; Uji, M.; Shono, M.; Nagata, T.; Kitamura, T. Effects of child abuse history on borderline personality traits, negative life events, and depression: A study among a university student population in Japan. *Psychiatry Res.* **2010**, *180*, 120–125. [CrossRef] [PubMed]
45. Heo, Y.-C.; Kahng, S.K.; Kim, S. Mental health system at the community level in Korea: Development, recent reforms and challenges. *Int. J. Ment. Health Syst.* **2019**, *13*, 9. [CrossRef]
46. Setoya, Y. Overview of the Japanese mental health system. *Int. J. Ment. Health* **2012**, *41*, 3–18. [CrossRef]
47. Sakano, M.; Snowden, N. Paving the way for the future of child and adolescent mental health in Japan. *Lond. J. Prim. Care* **2018**, *10*, 123–125. [CrossRef]

48. The Japanese Society for Child and Adolescent Psychiatry Certified Physician. Available online: http://child-adolesc.jp/nintei/ninteii/ (accessed on 15 December 2019).
49. Vuong, Q.H.; Napier, N.K. Acculturation and global mindsponge: An emerging market perspective. *Int. J. Intercult. Relat.* **2015**, *49*, 354–367. [CrossRef]
50. Pekerti, A.A.; Vuong, Q.H.; Napier, N.K. Double edge experiences of expatriate acculturation: Navigating through personal multiculturalism. *J. Glob. Mobil.* **2017**, *5*, 225–250. [CrossRef]
51. Nagata, K. Firms Go Abroad by Hiring Foreign Students Here. Available online: https://www.japantimes.co.jp/news/2013/02/26/reference/firms-go-abroad-by-hiring-foreign-students-here/#.XjHF2mgzZPY (accessed on 15 December 2019).
52. JIJI Japanese Government Bolsters Support for Foreign Students Seeking Jobs. Available online: https://www.japantimes.co.jp/news/2019/12/20/national/japan-ups-support-for-foreign-student-job-seekers/#.XjHF2mgzZPY (accessed on 15 December 2019).
53. Ma, H. Integration of hospital and community services-the 686 Project-is a crucial component in the reform of China's mental health services. *Shanghai Arch. Psychiatry* **2012**, *24*, 172–174. [PubMed]
54. Xiang, Y.-T.; Ng, C.H.; Yu, X.; Wang, G. Rethinking progress and challenges of mental health care in China. *World Psychiatry* **2018**, *17*, 231–232. [CrossRef] [PubMed]
55. Freshwater, D.; Sherwood, G.; Drury, V. International research collaboration: Issues, benefits and challenges of the global network. *J. Res. Nurs.* **2006**, *11*, 295–303. [CrossRef]
56. Vuong, Q.-H.; Napier, N.K.; Ho, T.M.; Nguyen, V.H.; Vuong, T.-T.; Pham, H.H.; Nguyen, H.K.T. Effects of work environment and collaboration on research productivity in Vietnamese social sciences: Evidence from 2008 to 2017 Scopus data. *Stud. High. Educ.* **2019**, *44*, 2132–2147. [CrossRef]
57. Widmer, R.J.; Widmer, J.M.; Lerman, A. International collaboration: Promises and challenges. *Rambam Maimonides Med. J.* **2015**, *6*, e0012. [CrossRef]
58. Wang, Y.; Sun, X.; Wang, L.; Zhou, Z.; Fang, Y.; Zhou, L.; Cai, H.; Qi, X.; Han, T.; Zhuang, G.; et al. International collaboration to promote global health: The 2017 Belt and Road Initiative Global Health International Congress & 2017 Chinese Preventive Medicine Association—Chinese Society on Global Health Annual Meeting. *Glob. Health J.* **2017**, *1*, 34–43.
59. Zhou, W.; Yu, Y.; Zhao, X.; Xiao, S.; Chen, L. Evaluating China's mental health policy on local-level promotion and implementation: A case study of Liuyang Municipality. *BMC Public Health* **2019**, *19*, 24. [CrossRef]
60. Vuong, Q.-H. Breaking barriers in publishing demands a proactive attitude. *Nat. Hum. Behav.* **2019**, *3*, 1034. [CrossRef]
61. Vuong, Q.-H. The (ir) rational consideration of the cost of science in transition economies. *Nat. Hum. Behav.* **2018**, *2*, 5. [CrossRef]
62. World Health Organization. *Mental Health Action Plan 2013–2020*; World Health Organization: Geneva, Switzerland, 2013.
63. Roh, S.; Lee, S.-U.; Soh, M.; Ryu, V.; Kim, H.; Jang, J.W.; Lim, H.Y.; Jeon, M.; Park, J.-I.; Choi, S.; et al. Mental health services and R&D in South Korea. *Int. J. Ment. Health Syst.* **2016**, *10*, 45. [PubMed]
64. Abdel Wahed, W.Y.; Hassan, S.K. Prevalence and associated factors of stress, anxiety, and depression among medical Fayoum University students. *Alex. J. Med.* **2017**, *53*, 77–84. [CrossRef]
65. Pham, T.; Bui, L.; Nguyen, A.; Nguyen, B.; Tran, P.; Vu, P.; Dang, L. The prevalence of depression and associated risk factors among medical students: An untold story in Vietnam. *PLoS ONE* **2019**, *14*, e0221432. [CrossRef] [PubMed]
66. Tennant, C. Life events, stress, and depression: A review of recent findings. *Aust. N. Z. J. Psychiatry* **2002**, *36*, 173–182. [CrossRef]
67. Vuong, Q.H. Be rich or don't be sick: Estimating Vietnamese patients' risk of falling into destitution. *SpringerPlus* **2015**, *4*, 529. [CrossRef]
68. Vuong, Q.-H.; Ho, T.-M.; Nguyen, H.-K.; Vuong, T.-T. Healthcare consumers' sensitivity to costs: A reflection on behavioural economics from an emerging market. *Palgrave Commun.* **2018**, *4*, 1–10. [CrossRef]
69. Vuong, Q.-H.; Vuong, T.-T.; Ho, T.; Nguyen, H. Psychological and socio-economic factors affecting social sustainability through impacts on perceived health care quality and public health: The case of Vietnam. *Sustainability* **2017**, *9*, 1456. [CrossRef]

70. Vuong, Q.-H.; Nghiem, K.-C.; La, V.-P.; Vuong, T.-T.; Nguyen, H.-K.; Ho, M.-T.; Tran, K.; Khuat, T.-H.; Ho, M.-T. Sex differences and psychological factors associated with general health examinations participation: Results from a Vietnamese cross-section dataset. *Sustainability* **2019**, *11*, 514. [CrossRef]
71. Vuong, Q.H. Data on Vietnamese patients' behavior in using information sources, perceived data sufficiency and (non) optimal choice of health care provider. *Data Brief* **2016**, *7*, 1687–1695. [CrossRef]
72. Japanese Cabinet. *The Healthcare Policy*; Japanese Cabinet: Tokyo, Japan, 2014.
73. Kasai, K.; Ando, S.; Kanehara, A.; Kumakura, Y.; Kondo, S.; Fukuda, M.; Kawakami, N.; Higuchi, T. Strengthening community mental health services in Japan. *Lancet Psychiatry* **2017**, *4*, 268–270. [CrossRef]
74. Kanata, T. Japanese mental health care in historical context: Why did Japan become a country with so many psychiatric care beds? *Soc. Work* **2016**, *52*, 471–489. [CrossRef]
75. OECD. *OECD Health Overview: Health Policy in Japan*; OECD: Paris, France, 2017.
76. Chen, H.; Phillips, M.; Cheng, H.; Chen, Q.; Chen, X.; Fralick, D.; Zhang, Y.; Liu, M.; Huang, J.; Bueber, M. Mental health law of the People's Republic of China (English translation with annotations): Translated and annotated version of China's new mental health law. *Shanghai Arch. Psychiatry* **2012**, *24*, 305–321.
77. Shao, Y.; Wang, J.; Xie, B. The first mental health law of China. *Asian J. Psychiatry* **2015**, *13*, 72–74. [CrossRef]
78. Xie, Y.; Zhang, C.; Lai, Q. China's rise as a major contributor to science and technology. *Proc. Natl. Acad. Sci. USA* **2014**, *111*, 9437–9442. [CrossRef]