The influence of social support on sexual mental health of female college students

Yu-Hang Wang, MEd, Zhou-Ting Shi, MEd

Abstract
The aim of this study was to explore the impact of social support on female college students’ sexual mental health (SMH) on the basis of realizing the current status of their SMH.

A total of 627 female college students from 5 colleges and universities in Hangzhou were enrolled in the study and provided with questionnaires to evaluate their SMH and social support rating scale.

The scores of SMH and social support were 2.46±0.29 and 38.29±4.37, respectively. The scores of SMH of female college students in different grades and places of origin were significantly different ($P < .05$). There was a negative correlation between the scores of each dimension of SMH and that of social support ($r = -0.157$ to $-0.419$, $P < .01$).

Social support has an important influence on the SMH of female college students. Higher level of SMH is associated with greater social support. Colleges and universities can improve the social support system of female students through various measures to improve their SMH.

Abbreviations: ANOVA = analysis of variance, OARs = outside available resources, SMH = sexual mental health.

Keywords: China, college student, female, sexual mental health, social support

1. Introduction
With globalization and recent economic reforms, Western culture and social trends have been introduced into China. The relatively unrestrained sexual culture of Western countries, however, has strongly impinged on the more traditional Chinese culture. As a young and highly educated group, college students have more exposure to new cultures, ideas, and trends. As a result, Western sexual mores have quickly permeated the university campuses and have influenced the sexual mental health (SMH) of college students, especially female students, to a great extent. High risk and unsafe sexual behaviors have increased the incidences of sexually transmitted diseases, and unintended pregnancies and abortions among female college students, which in turn affect their mental health. As early as the beginning of this century, He[1] statistically analyzed the data released by the psychologic counseling centers of major colleges and universities and found that emotional and sexual problems were the top concerns among female students. As much as 77.7% of the students had some degree of sexual anxiety, which indicated SMH problems. SMH includes sexual cognition and attitude, which can effectively predict sexual behavior. A lot of previous studies have shown that social support, referring to an individual’s “outside available resources (OARs)” in the decision-making process, can have a positive effect on the mental health of college students.[2–4] The purpose of this study was to determine whether social support also promotes the SMH of female college students. Based on our understanding of the current level of SMH and social support among female college students, we explored the influence of social support on their SMH to provide a scientific basis for future studies and educate female students regarding SMH.

2. Subjects and methods

2.1. Study subjects and ethics committee approved
By stratified random sampling, 627 female college students from 5 universities in Hangzhou were selected as the research subjects, and included 168 freshmen, 153 sophomores, 159 juniors, and 147 seniors. The research was approved by the Institute of Moral and Mental Healthy Education, Zhejiang University of Finance & Economics Ethics Committee (Zhejiang, China), and informed consent was obtained from each participant.

2.2. Investigative tools: basic and SMH questionnaire
The basic information questionnaire was used to collect demographic information, including grade, place of origin, relationship status, and whether single parent or not. The SMH questionnaire developed by Yang et al.[5] includes 2 dimensions: sexual cognition and sexual attitude which have 21 and 10 items, respectively, that gauge sexual cognition and sexual attitude. Each item adopts Likert 5-point scores, ranging from low to high, that is, “completely disagree,” “relatively disagree,” “uncertain,” “relatively agree,” and “completely agree.” Of the 31 total items,
25 are scored positively (1–5 points) and 6 are scored reversely (5–1 points). For positive scoring, higher scores indicate a higher level of mental health, while for negative scoring, higher scores represent lower mental health. This questionnaire has good reliability and validity, with retest reliability 0.78, Cronbach α coefficient 0.70, and the split-half reliability 0.74. Two principal components were selected by principal component analysis, and the cumulative contribution rate was 74.00%, in accordance with the theoretical framework of original design. According to the variables in the absence of the norm, the measured population can be divided into 3 types according to the mean and standard deviation. Therefore, scores ≤2.71 (mean score – standard deviation) mean high level, scores ≥3.29 (mean score + standard deviation) mean low level, and scores between 2.71 and 3.29 mean medium level.

2.3. Social support rating scale

The social support rating scale prepared by Xiao and Shuiyuan was adopted for this study. The scale consists of 10 items, including objective support, subjective support, and support utilization. For items 1 to 4 and 8 to 10, only one option is selected for each item, and the options 1, 2, 3, and 4 are scored likewise. Item 5 has 4 options (A, B, C, and D), and each option is scored from 1 to 4 points. For items 6 and 7, a “no source” response is counted as 0, and “the following sources” is scored as x depending on the number of sources (x). Subjective support scores are the sum of the scores of items 1, 3, 4, and 5, objective support score is the sum of the scores of items 2, 6, and 7, and the degree of utilization of support is the sum of the scores of items 8, 9, and 10. The sum of the scores of 10 items is the total score of social support; the higher the total score and the scores in each dimension, the better the degree of social support. A total score ≤22 points indicates low level, 23 to 44 medium level, and 45 to 66 high level of social support. The scale retest reliability is 0.92, and the Cronbach α coefficient in each dimension is 0.89 to 0.94. Due to the demographic characteristics of the subjects queried in this survey, some items of the questionnaire were modified. For example, in the fourth question, “colleagues” was changed to “classmates”; in the fifth question, “couples” were changed to “lovers,” and “children” was deleted; in questions 6 and 7, “spouse” was changed to “lover” and “colleague” was changed to “classmate”; in question 10, “student community” option was added. The scores were recalculated based on the revised scale, and the statistical analysis showed that the modified scale retained high reliability and validity.

2.4. Data collection

The investigators for this study were suitably trained, and the instruction language and actual test stages were unified. A random stratified sampling survey was carried out in the universities and colleges, and the questionnaire was handed to the subjects on the spot and recovered on the same day. The purpose and significance of the investigation were explained to the subjects before starting the test, which was required to be completed independently and anonymously. A total of 680 questionnaires were sent out, and 627 valid questionnaires were collected, with a 92.21% effective recovery rate.

2.5. Statistical analysis

The SPSS 18.0 was used for statistical analysis. Measurement data were presented as frequencies and percentages or mean ± standard deviation. T test or single factor analysis of variance (ANOVA) was used to analyze the difference between total score and dimension score of mental health of students in different categories. The relationship between SMH and social support, and the relationship among all dimensions was analyzed by Pearson-related analysis.

3. Results

3.1. SMH scores of female college students

According to the 31 items of sexual cognition and sexual attitude, the average score of the female college students’ SMH was 2.46 ± 0.29. Some students had moderate and some had higher scores, as shown in Table 1.

3.2. Social support scores of female college students

As shown in Table 2, the average total social support score of female college students participating in the survey was 38.29 ± 4.37 points, which lay in the upper middle level. The average subjective support score, average objective support score, and average support utilization score were 20.27 ± 3.31, 10.33 ± 2.31, and 7.69 ± 1.68 points, respectively.

3.3. Comparison of SMH scores and scores of each dimension among different student categories

The total SMH and individual dimension scores of distinct categories of female college students were statistically analyzed and compared using t test or univariate analysis of variance, respectively (Table 3). The total SMH scores differed significantly across the grades and places of origin (P < .05), while no significant differences were seen between single parent family or not, or among students with different relationship status (P > .05). The sexual cognition scores of students in different grades and places of origin were also significantly different (P < .05), but no significant difference was seen between single parent families or not, or between students with different relationship status (P > .05). The sexual attitude scores differed significantly among students with different relationship status (P < .05). There was no significant difference in the sexual

| Table 1 | Sexual mental health scores of female college students (n=627). |
|---------|---------------------------------------------------------------|
| Item    | Number of items | Score (x ± s) | Average score of each item (x ± s) |
|---------|-----------------|---------------|----------------------------------|
| Sexual cognition | 21 | 56.43 ± 6.56 | 2.69 ± 0.31 |
| Sexual attitude | 10 | 19.87 ± 4.57 | 1.99 ± 0.46 |
| Total score | 31 | 76.30 ± 7.99 | 2.46 ± 0.29 |

| Table 2 | Social support score of female college students (n=627). |
|---------|----------------------------------------------------------|
| Item    | Number of items | Score range | Score (x ± s) |
|---------|-----------------|-------------|---------------|
| Subjective support | 4 | 6–28 | 20.27 ± 3.31 |
| Objective support | 3 | 1–23 | 10.33 ± 2.31 |
| Utilization of support | 3 | 3–12 | 7.69 ± 1.68 |
| Total score | 10 | 10–63 | 36.29 ± 4.37 |
Table 3
Comparison of the total scores of sexual mental health and scores of each dimension of female college students (n = 627).

| Item                              | Number of cases (%) | Sexual cognition | Sexual attitude | Total score of mental health |
|-----------------------------------|---------------------|------------------|----------------|-----------------------------|
| Grade                             |                     |                  |                |                             |
| Freshman                          | 168 (26.79)         | 2.72 ± 0.31      | 3.839          | 0.007*                      |
| Sophomore                         | 153 (24.40)         | 2.66 ± 0.30      | 3.810          | 0.121                      |
| Junior                            | 159 (25.36)         | 2.61 ± 0.32      | 3.821          | 0.219                      |
| Senior                            | 147 (23.45)         | 2.58 ± 0.35      | 3.810          | 0.349                      |
| Places of origin                  |                     |                  |                |                             |
| Countryside                       | 426 (67.94)         | 2.74 ± 0.31      | 3.994          | 0.003*                      |
| Cities and towns                  | 201 (32.06)         | 2.56 ± 0.30      | 3.918          | 0.191                      |
| Single parent family?             |                     |                  |                |                             |
| Yes                               | 56 (8.93)           | 2.62 ± 0.32      | 3.821          | 0.297                      |
| No                                | 571 (91.07)         | 2.65 ± 0.33      | 3.919          | 0.312                      |
| Relationship status               |                     |                  |                |                             |
| In a relationship                 | 459 (73.21)         | 2.68 ± 0.31      | 3.836          | 0.314                      |
| Not in a relationship             | 168 (26.79)         | 2.66 ± 0.34      | 3.826          | 0.334                      |

* P < 0.05.

3.4. The relationship between SMH and social support in different student categories

The total scores of SMH, the scores of each dimension, and total social support scores of the participants were analyzed by Pearson grade difference analysis (Table 4). Negative correlations were seen between the SMH and social support scores (r = −0.419, P < 0.01), and between the scores of each dimension of SMH and social support scores (r = −0.157 to −0.345, all P < 0.01).

4. Discussion

4.1. SMH scores differ among the female college students and span across medium and higher levels

As shown in Table 1, the average mental health score of the students was 2.46 (s = 0.29), which spanned the middle and higher levels indicating that the current SMH of most students is moderate, and that of some students is higher. This is consistent with the findings of Li and Xiao,[10] as well as Xiang and Cao.[11] In other words, the development of sexual cognition and sexual attitude was normal in majority of the students but differed between some student categories. The main reason for this observation is that China has paid increasingly more attention to sex education since the 1990s. In most regions with high education rates, post-1995 college students have been receiving sex education since junior high school, and thus have acquired certain sexual knowledge. This coupled with currently accessible online sources has facilitated their learning and understanding of sex-related knowledge. In addition, colleges and universities have also invested in sexual education, especially SMH education, by including chapters related to sexual knowledge in their curriculum. Some institutions even offer special courses and lectures to guide college students in maintaining their mental health. Moreover, in recent times, sexual health education has also been given importance in many families, especially those with higher education level. In summary, not only is sexual health education no longer neglected, but also the educational methods and levels have also improved.[12] However, the above factors are responsible for the overall situation of the majority of female college students. There are still a few students who have incorrect sexual cognition and unhealthy sexual attitude due to negative influencing factors of individuals, family, schools, society, culture, etc., which hinders the healthy development of their sexual psychology. This section of female college students should be the focus of sexual health education in colleges and universities. Furthermore, it is necessary to adopt both diverse and targeted education methods to stratify and classify the students and improve their SMH.

4.2. The social support level of female college students is relatively uniform and clustered in the middle and upper level

As shown in Table 2, the average total score of social support among female college students is 38.29 (s = 4.37), which belongs to the upper middle level and is consistent with the results of Meng and Zhang.[13] Furthermore, compared to the norm of domestic social support score (34.56 ± 3.73), the total social support score in our survey was significantly higher (t = 19.531, P < 0.05), indicating that the students had a good social support

Table 4
Correlation between sexual mental health and social support of female college students (r value).

| Item                              | Subjective support | Objective support | Utilization of support | Total score of social support |
|-----------------------------------|--------------------|------------------|------------------------|-------------------------------|
| Sexual cognition                  | −0.236*            | −0.263*          | −0.157*                | −0.301*                       |
| Sexual attitude                   | −0.345*            | −0.282*          | −0.208*                | −0.394*                       |
| Total score of sexual mental health| −0.349*            | −0.334*          | −0.219*                | −0.419*                       |

* P < 0.01.
system. On the whole, first, this is related to the fact that most of the post-1995 female college students are the only child of their parents, and the parents generally do not have a preference for sons and provide good care to daughters also during their childhood and young adulthood. Secondly, colleges and universities now have more teachers and policies that can provide more support and guidance to female college students in terms of life and learning. Finally, educational institutions nowadays are offering more diverse training along with practical activities both in and out of campuses, which provides the students with more opportunities for social activities and gives them a sense of accomplishment and support. In addition, of the 3 dimensions of social support, the subjective support score was higher, indicating that the students are encouraged to discuss their inner feelings. However, their scores of supports utilization are relatively low, indicating that the ability of some students to utilize the available social support resources is poor. To rectify this, colleges and universities can take appropriate measures, such as strengthening teacher–student and student–student exchanges, establishing exclusive peer social networks, providing psychologic counseling, etc. to maximize use of social support.

4.3. The total SMH scores and that of individual dimensions are significantly different among various student categories

As shown in Table 3, students in higher grades have higher levels of sexual psychologic health than those in lower grades, consistent with the results of Yu et al.\(^\text{[14]}\) and Ning et al.\(^\text{[15]}\) With increasing grade, the sexual cognition scores of the female students increased significantly \((P < .05)\), but there was no significant difference in the scores of sexual attitudes among students of different grades. One reason for this is that students in higher grades have more sexual experiences because of higher age and sexual maturity, which enriches their sexual knowledge. Secondly, freshmen of many colleges and universities have a relatively heavier study burden and restricted use of computers and internet in their dormitories, which reduces their access to sexual knowledge to some extent. A related study showed that modern college students generally gain sexual knowledge through the internet.\(^\text{[16]}\) It should be emphasized that we are not encouraging educational institutions to offer young female students free access to websites to acquire sexual knowledge, since not all sex-related knowledge found on the internet is scientific and beneficial. Furthermore, compared to senior students, the junior students do not have enough judgment and discretion to distinguish between useful and harmful sexual knowledge. Therefore, we suggest that colleges and universities should take appropriate steps, such as special courses and lectures, to impart correct sexual knowledge to junior students and to help them develop a healthy sexual attitude. In addition, the overall level of SMH of female college students from cities and towns was higher than those from rural areas; while the sexual cognition scores of the city- and town-raised students was significantly higher \((P < .05)\), no significant differences were seen in sexual attitudes scores between the 2 groups \((P > .05)\). This difference is fundamentally related to the regional differences in the access to sexual knowledge, which in turn results from the differences in the level of economic development and educational resources. Students from cities and towns in general have more access to sexual knowledge, mainly due to owning computers and educated parents who are more open to sex education, than those from rural areas, and thus obtain healthy and complete sexual knowledge. Therefore, colleges and universities should pay more attention to the SMH of female students from rural areas by helping them improve their sexual knowledge. It is noteworthy that the sexual attitude score of students in a relationship was significantly higher than those who were not in a relationship \((P < .05)\), although no significant differences were seen in the sexual cognition scores between the 2 groups \((P > .05)\). This may have something to do with women being more emotional, and more likely to lose their sense and judgment when in a relationship. Specifically, students who are in a relationship are stimulated by hormones and are more eager and receptive to sex, which lowers their self-control, increases the risk of unsafe sex, and lowers their awareness of the potentially harmful consequences of premarital sexual behavior, which ultimately affects their SMH.\(^\text{[17]}\) Colleges and universities should pay more attention to female students in a relationship, provide them with ideologic education and professional psychologic counseling, solve any sexual and/or psychologic queries in a timely manner, and correct their sexual attitudes to promote a healthy development of sexual psychology and avoid unsafe sexual behavior.

4.4. SMH scores are negatively correlated to the social support scores of female college students

As shown in Table 4, there was a negative correlation between the SMH scores and social support scores of the female college students in this survey \((r = -0.419, P < .01)\), indicating higher level of SMH with stronger social support. The reason may be that students with good social support network, in the form of parents, teachers, classmates, and friends, have a stronger sense of well-being and happiness, as well as a higher degree of utilizing the social support. They can acquire correct sexual knowledge through more extensive channels to form appropriate sexual perception and establish more positive sexual attitudes. Therefore, colleges and universities should provide more social support to female students, whether emotional or material. This can help the students improve their sexual judgment and discretion, reject incorrect sexual knowledge and unhealthy ideas, form positive sexual attitude, and promote their SMH development.

In addition, a negative correlation was also seen between subjective social support and SMH \((r = -0.349, P < .01)\), indicating that subjective support had a positive effect on the psychologic health of female university students. The main reason may be that SMH emphasizes subjective feelings on emotion and spirit, as its constituent essential factors, sexual cognition and sexual attitude, both belong to the subjective factor. This is consistent with the findings of Lu et al.\(^\text{[18]}\) and Liu,\(^\text{[19]}\) although the subjective support is not an objective reality, but instead the perceived or psychologic reality, which directly affects human behavior and development. Therefore, good emotional and spiritual support can encourage female college students to develop good sexual psychology. We therefore recommend that parents, teachers, classmates, friends, and society should give more subjective support to female college students to enhance sexual psychologic communication between female college students, to understand their confusion regarding sexual matters, and to provide them with psychologic guidance to improve their SMH levels. Secondly, objective support was also negatively correlated with SMH \((r = -0.334, P < .01)\), indicating higher level of sexual psychologic health with more objective support. Compared to subjective support, objective support comes from concrete steps taken by social support system.\(^\text{[20]}\)
such as material aid, group aid, and so on. Reevea et al[21] pointed out that the improvement of college students’ psychological health requires colleges to expand and optimize the social support network for students and establish student organizations. Therefore, we also advocate that colleges and universities help female college students build a bigger and stronger social support network, help them increase their use of support and strengthen their sexual knowledge to improve sexual cognition, form correct sexual attitudes, and promote the healthy development of their own sexual psychology.

To sum up, the level of female college students’ SMH is closely related to social support, which has a positive effect on the level of SMH. We recommend that colleges and universities should explore and innovate educational methods and optimize and expand the social support network of students to promote their SMH.

Author contributions

Funding acquisition: Yu-Hang Wang.
Investigation: Yu-Hang Wang, Zhou-Ting Shi.
Supervision: Yu-Hang Wang, Zhou-Ting Shi.
Writing – original draft: Yu-Hang Wang, Zhou-Ting Shi.
Writing – review & editing: Yu-Hang Wang, Zhou-Ting Shi.

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