EPIDEMIOLOGY

Correlation of Sexual Behavior Change, Family Function, and Male-Female Intimacy Among Adults Aged 18-44 Years During COVID-19 Epidemic

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ABSTRACT

Introduction: Coronavirus disease (COVID-19) has been declared a global pandemic. In this unprecedented situation, the intimate relationship, sexual behavior, and family functions of partners have also undergone unique changes. There are few reports on whether sexual behavior and family function affect intimate relationships between partners, especially among people aged 18 to 44 years.

Aim: To analyze the influence of sociodemographic characteristics, family function, and changes in sexual behavior on male-female intimacy, the independent contributions of the aforementioned factors in this population group are required to be further investigated.

Methods: In the present study, 284 Chinese citizens aged 18-44 years completed the online questionnaire. The univariate analysis and cluster multiple linear regression were used to analyze the associations between sociodemographic factors, sexual-behavior changes, family function, and male-female intimacy.

Main Outcome Measure: Family adaptation, partnership, growth, affection, resolve (APGAR) Scale and Relationship Assessment Scale were used to evaluate participants' family function and their intimacy. Details of the participants (sociodemographic and sexual factors) were obtained.

Results: The summary scores, with Relationship Assessment Scale and APGAR scales, were 27.19 ± 4.49 and 6.76 ± 2.28, respectively. About 43.3% of participants reported a decrease in sexual frequency. There were considerable differences among age, education level, sexual desire, sexual satisfaction, quality of sexual life, family function with male-female intimacy ($P < .05$). The sexual satisfaction and intimacy demonstrated a significant positive correlation ($P < .05$) by cluster multiple linear regression analysis. Compared with those who had a sexual life of mediocre quality, respondents who experienced a good quality sexual life had relatively higher scores in intimacy. The independent contributions of sociodemographic factors, sexual behavior factors, and family function in male-female intimacy were 13.0%, 38.2%, and 48.8%, respectively.

Conclusions: Sexual behavior factors and family function were important independent determinants of partner intimacy among people aged 18-44 years. It can provide supportive information for health care to develop intervention plans and services to promote the harmonious development of intimate relationship. Feng Y-J, Fan Y-J, Su Z-Z, et al. Correlation of Sexual Behavior Change, Family Function, and Male-Female Intimacy Among Adults Aged 18-44 Years During COVID-19 Epidemic. Sex Med 2021;9:100301.

Key Words: COVID-19; Male-Female Intimacy; Sexual-Behavior; Family Function

INTRODUCTION

Coronavirus disease (COVID-19) has been declared as a global pandemic and has infected more than 9,000,000 people in 215 countries.[1,2] In most cities of China, the government has scaled up the response to major public health emergencies to the highest level, which adopts enclosed management and strictly limits unnecessary social activities. Under such closed management, people's physical health may be affected. Studies have shown that these measures can lead to dietary changes during the lock-up period, leading to malnutrition or obesity.[3,4] It can also have negative effects on mental health, such as sleep problems, depression, anxiety, and fear of death.[5] In this unprecedented situation, the relationship between men and women, individual sexual behavior, and family function had also undergone unique changes among adults aged 18-44 years.[6]

Youth is the core of the society, as a social link between the past and the future, full of vitality and creativity of the generation group. Moreover, in a country's social stability and harmony, the young play a vital role, and the stability of them is the cornerstone of social stability. However, the psychology and physiology of young people are easily affected by various factors. In Erikson's theory of psychosocial development,[7] some young people, because of the physiological and psychological needs, hope that they can have a intimate and stable relationship. But when they are in love, trivial things may cause them to be dissatisfied with intimate relationship and even lead to a deterioration of the relationship, which may have a negative impact on their study, life, and even their career development trajectory. A major part of the crowd learns and grows in intimate relationships. This ability to maintain an intimate relationship and the experience of this will directly affect the quality of future marriage and thus affects the family life, the upbringing of children, and social stability.

Intimate relationship, in a broad sense, emphasizes the degree of interdependence between the 2 parties, including relatives, friends, partners, lovers, and so on. In contrast, the narrow sense of intimacy refers only to romantic and husband-wife relationship, in which male and female are usually partners.[8] Sexual activity was defined as including penetration/intercourse (vaginal, oral, or anal), mutual pleasuring, or masturbation, with or without a partner.[9] Catastrophic events may create a chaotic, traumatic, and sad environment which results in lasting psychological effects. During pandemics and disasters (COVID-19), high levels of stress impaired an individual's mental health (anxiety, insomnia), cognitive function (decreased memory or executive function), and high-risk behaviors (increased incidence of domestic violence). Moreover, economic instability, unemployment or underemployment, school closures, and regional infrastructure closures led to devastating psychological impact.[10−12] The evidence of the negative effects of stress on sexual function is consistent, and the mechanisms involved in this relationship are not well defined.[13] In this present study, the intimate relationship between male and female is defined in a narrow sense, and sexual activity especially refers to sexual intercourse. Previous report displayed that sexual behavior was associated with the intimate relationship between male and female, with sexual desire and emotional intimacy at the core of relationship[14] and that sexual satisfaction is a strong predictor of relationship satisfaction. During the COVID-19 pandemic, there are a number of psychological and physical stresses due to the rate of the outbreak and spread of COVID-19. These stresses can lead to changes in men's and women's sexual behavior, particularly an increase in the incidence of violence and risky sexual behavior between partners (such as unsafe sexual intercourse and multiple sexual partners), further affecting their intimate relationships.

Family adaptation, partnership, growth, affection, resolve (APGAR) Scale is the reliability index of the family function and can reflect the satisfaction of the individual in family function.[15] During the COVID-19 outbreak, families face enormous economic and psychological pressure and some new stressors. Family function will suffer huge negative impact such as intensified marital conflict and risk of divorce, and at the same time, it also can affect the intimacy between men and women.[16,17]

Lockdown due to COVID-19 affects every aspect of daily life; at present, a large amount of literature only focuses on the effect of violence between partners on intimacy,[18,19] but seldom reported whether the sexual behavior and family function affect male-female intimacy. Based on this, we conducted this study to explore the changing trends in sexual life and family function, and whether they affect intimate relationships between men and women, and to estimate the independent contributions of these factors to intimacy between men and women. In the event of a public health emergency, our study may extend the knowledge about sexual health among people aged 18-44 years and promote intimacy between partners. The study also can provide supportive information for health care to develop intervention plans and services to promote the harmonious development of intimate relationship between young men and women.

METHODS

Study Design and Participants

This cross-sectional study was conducted among the citizens of China from 27th May to 6th June 2020. The work was carried out by using of an online survey (https://www.wjx.cn/jq/90016297.aspx). A convenient sampling technique was followed in the study. Questionnaire links were forwarded to all investigators' colleagues who were asked to forward or post links among their friends and their social software. When clicking on the questionnaire link, participants were shown, at the start of the survey, a brief summary of the survey on the screen, which was followed by a consent form. Then they began to answer the questionnaire. G-power3.1 (Franz Faul, Universität Kiel, Germany) software was used to calculate the sample size. The study power was 0.95, α was 0.05, and the sample size was estimated to be 252. Considering the invalid questionnaire, the final sample size of the included study was 284.

Table 1. Univariate analysis of socio-demographics factors, sexual-behavior factors, family function and male-female intimacy (n = 284)

Variables	n (%)	Mean ± SD
Cluster 1: Sociodemographic factors		
Gender		
Male	134 (47.2)	27.35 ± 4.23
Female	150 (52.8)	27.04 ± 4.72
P value (t value)		0.562 (0.581)
Marital status		
Single/divorced/widowed	166 (58.5)	27.40 ± 4.79
Married	118 (41.5)	26.88 ± 4.18
P value (t value)		0.335 (0.965)
Age(years)		
≤20	34 (12.0)	29.02 ± 4.79
21~	205 (72.2)	27.18 ± 4.32
31~44	45 (15.8)	25.80 ± 4.61
P value (F statistic)		0.006 (5.151)
Residence		
Urban	199 (70.1)	27.25 ± 4.54
Rural	85 (29.9)	27.04 ± 4.39
P value (t value)		0.711 (0.370)
Education level		
High school or lower	51 (18.0)	25.96 ± 4.28
Graduate	181 (63.7)	27.66 ± 4.24
Postgraduate or above	52 (18.3)	26.73 ± 4.49
P value (F statistic)		0.041 (3.234)
Working or studying at home		
Yes	233 (82.0)	27.49 ± 4.33
No	51 (18.0)	25.76 ± 4.96
P value (t value)		0.012 (2.519)
Financial situation		
Reduce	174 (61.3)	26.95 ± 4.36
Unchanged	93 (32.7)	27.79 ± 4.65
Increase	17 (6.0)	26.29 ± 4.81
P value (F statistic)		0.239 (1.440)
Cluster 2: Sexual behavior factors		
Number of sexual partners		
Reduce	50 (17.6)	26.20 ± 3.98
Unchanged	223 (78.5)	27.46 ± 4.42
Increase	11 (3.9)	26.09 ± 7.08
P value (F statistic)		0.142 (1.965)
Frequency of sexual intercourse		
Reduce	123 (43.3)	27.12 ± 4.42
Unchanged	117 (41.2)	26.90 ± 4.58
Increase	44 (15.5)	28.11 ± 4.41
P value (F statistic)		0.309 (1.179)
Sexual desire		
Reduce	71 (25.0)	26.00 ± 4.15
Unchanged	159 (56.0)	27.55 ± 4.44
Increase	54 (19.0)	27.69 ± 4.85
P value (F statistic)		0.036 (3.377)

(continued)

Table 1. Continued

Variables	n (%)	Mean ± SD
Sexual satisfaction		
Reduce	61 (21.5)	25.55 ± 4.35
Unchanged	131 (46.1)	26.37 ± 4.26
Increase	92 (32.4)	29.43 ± 4.05
P value (F statistic)		<0.001 (20.108)
Quality of sexual life		
Bad	50 (17.6)	25.80 ± 4.29
General	139 (48.9)	26.29 ± 4.19
Good	95 (33.5)	29.22 ± 4.35
P value (F statistic)		<0.001 (16.489)
Cluster 3 Family function		
Severe family dysfunction	19 (6.7)	24.11 ± 4.05
Moderate family dysfunction	115 (40.5)	25.36 ± 4.26
Good family function	150 (52.8)	28.97 ± 4.49
P value (F statistic)		<0.001 (31.310)

Procedures

Data cleansing was carried out by one investigator, and a second investigator cross-checked the data. The participants were primarily asked to report their sociodemographic information. Then, they completed a self-administered questionnaire that includes sensitive sexual behavior factors items, Relationship Assessment Scale (RAS), and Family APGAR Scale. All these symptoms were assessed during the COVID-19 outbreak. The questionnaires were randomly released in the general population. Criteria for recruitment were male and female aged between 18 and 44 years, married or cohabiting people, and heterosexual with a history of sexual activity (people had experienced coitus). Exclusion criteria were couples with pregnant woman, participants or their partners who were diagnosed with systemic diseases, mental disorders, sexually transmitted diseases, or other serious conditions which could lead to sexual dysfunction or taking any drugs that altered sexual function. Besides, COVID-19—positive people were also excluded from the survey. All participants provided informed written consent, and the study was approved by the research ethics committee of Henan University (HUSOM2020-0 11).

Participant Characteristics

Sociodemographic factors are shown in Table 1.

Evaluation of the Sexual Behavior

Sexual behavior factors were assessed using 5 items, representing the feelings of the change about sexual activities within, before, and during the period of lockdown, and are exhibited in Supplementary Table 1. The reasons we chose these 5 items were based on previous population-based studies.[20,21] Our goal was to explore whether the sexual life of male and female had changed during the lockdown compared with before. To properly assess

the associations between the variables in the 3 clusters and RAS, we used dummy variables for disordered multicategory variables.

Family APGAR Scale

The Family APGAR Scale is a 5-item questionnaire developed by Smilkstein, is designed to examine satisfaction with variables of APGAR, and collects information on 5 areas of family function.[22] These variables are evaluated on a 0 to 2 scale with a 0 to 10 total score (2 = almost always, 1 = some of the time, 0 = hardly ever), indicating the higher the score, the better the family function (0~3 = high dysfunctionality, 4~6 = moderate dysfunctionality, 7~10 = good functionality). The Chinese version has shown evidence of reliability and construction validity in Taiwan.[23] The alpha internal consistency in the present sample was 0.91.

Relationship Assessment Scale

RAS[24,25] is a short 7-item Likert-scale measure of partner's relationship satisfactions. In general, it mainly focuses on how satisfied are you with your relationship. Items are scored on a 5-point Likert scale. Scores range from 1 (low satisfaction) to 5 (high satisfaction). Items 4 and 7 are reverse scored. Total score ranges from 7 to 35, and the higher scores indicate better relationship satisfaction. In our study, the Chinese version of RAS, which was translated from the English version, was used to evaluate the intimacy between partners, and it has shown satisfactory construction and maintains high internal consistency. The alpha internal consistency in the present sample was 0.86.

Statistical Analysis

SPSS version 22.0 (SPSS Inc, Chicago, IL) software was used for statistical analysis. All data were normally distributed. Mean ± standard deviations were presented for continuous variables, while frequency and percentage were presented for categorical variables. We assessed the association between sociodemographic, family function, and sexual behavior variables and male-female intimacy using univariate analysis (t test and one-way ANOVA) and clustered multiple linear regression analysis (enter model). The male-female intimacy was assigned as a dependent variable, whereas the sociodemographic (the statistically significant variables: age, education level, currently working or studying at home), changes in sexual behavior (the statistically significant variables: sexual desire, sexual satisfaction, quality of sexual life), and APGAR were independent variables; we used dummy variables for disordered multicategory variables. For all statistical comparison, significance level was set at $P < .05$.

To be specific, the scores of RAS were used as dependent variables and variables in the 3 clusters as independent variables. Clustered multiple linear regression analysis was devoted to probe the impacts of participants' sociodemographic characteristics, sexual behavior factors, and family function on RAS. There were multidirectional correlations between the 3 clusters of independent variables and the dependent variables. In other words, sociodemographic variables (cluster 1) may affect sexual behavior factors (cluster 2) and family function (cluster 3) as well as the dependent variables (RAS scores). Furthermore, cluster 3 and the dependent variables were influenced by cluster 2. Besides, cluster 3 may only affect the dependent variables. In general, variables in the latter cluster will be affected by the variables in the previous cluster, and the mechanism worked the other way as well. The final regression model was determined by 3 steps[26]: (i) an enter regression of RAS for the cluster 1 variables; (ii) the fixed part of the new regression model was the equation derived in step 1, and the cluster 2 variables were entered into regression; (iii) the fixed part of the new regression model was the equation derived in step 2, and the cluster 3 variables were entered into regression. The variables' entry and exclusion criteria for the enter regression models were P values of 0.05 and 0.10, respectively.

By calculating the corresponding R^2 change, the independent influence of each cluster on the dependent variable can be determined. The independent contribution of each cluster was then calculated by (individual R^2 change/total R^2) × 100%.[27]

RESULTS

Participant Characteristics

A total of 284 individuals aged 18—44 years participated in the present study (134 male and 150 female). Most participants' age group was between 21 and 30 years (72.2%). Most respondents (70.1%) resided in the urban areas. The majority of the study participants had a high level of education (63.7% graduate). Approximately 82.0% of respondents were working or studying at home, and 61.3% participants experienced financial reduction during the COVID-19. Approximately 17.6% of the participants felt the number of sexual partners has reduced. About 123 (43.3%) participants reported decreased sexual frequency; only 44 (15.5%) reported an increase. According to the present study, 25.0% of the participants experienced reduction in sexual desire, while only 19.0% of participants experienced an increase. A minority of participants (21.5%) suggested that sexual satisfaction has reduced. Almost half of the participants (48.9%) revealed that the quality of sexual life was as usual, as illustrated in Figure 1. About half of subjects' family function (40.5%) was at a moderate level of impairment. The sociodemographic factors, sexual behavior factors, and family function in the sample set are detailed in Table 1.

RAS and APGAR Summary Scores

The RAS summary score was 27.19 ± 4.49. APGAR summary score was 6.76 ± 2.28 which indicated moderate family dysfunction during COVID-19 outbreak. Compared with others studies in which the age range of participants, the score of RAS,[28,29] and APGAR[30,31] were similar, it is evident that the degree of male-female intimacy and family function has decreased during COVID-19 period; the changing trend is shown in Figure 2.
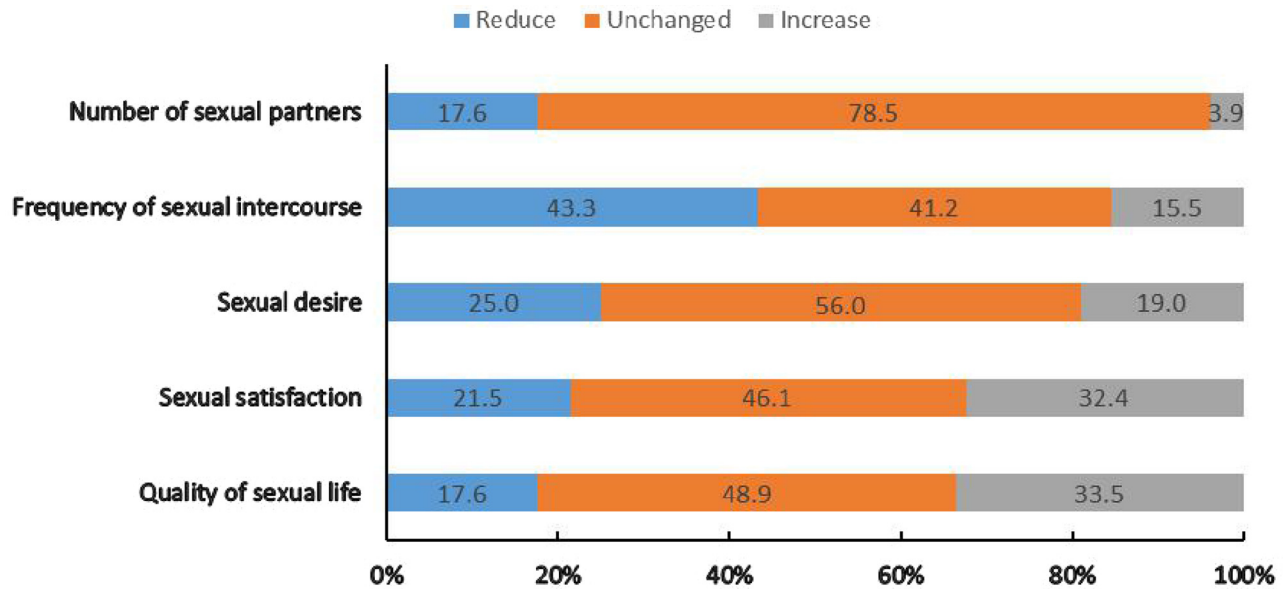
Figure 1. The change of sexual behavior during COVID-19 outbreak.

Univariate Analysis RAS Score Factors

It indicated that male-female intimacy was associated with age group, education level, working or studying at home, sexual desire, sexual satisfaction, quality of sexual life, and family function (all $P < .05$). Apparently, there were significant associations between sexual behavior factors and the male-female intimacy.

Cluster Multiple Linear Regression Analysis

Cluster multiple linear regression was performed to explore the influence of sociodemographic changes in sexual behavior (the statistically significant variables in Table 1) and family function on male-female intimacy with an estimate of their independent contributions to male-female intimacy (as demonstrated in Table 2). After adjustment for variables, our results showed that sexual behavior factors and family function were proven to be significant predictors of the intimacy. On the subscales, the public who felt

good in quality of sexual life obtained higher intimacy than those who felt basic in quality of sexual life. Moreover, the independent contributions of sociodemographic factors, sexual behavior factors, and family function were 13.0%, 38.2%, and 48.8%. The independent contributions of the mentioned 3 clusters to the intimacy of young-aged population are illustrated in Figure 3.

DISCUSSION

An initial objective of the research was planned to survey the influence of COVID-19 epidemic on sexual behavior, family function, and intimacy and to identify the associations of sexual-behavior changes, family function, and intimacy in young-aged individuals. The results of this study indicated that sexual behavior changes (sexual satisfaction, quality of sexual life) and family function were significantly associated with intimacy. In addition, sexual behavior changes and family function had higher
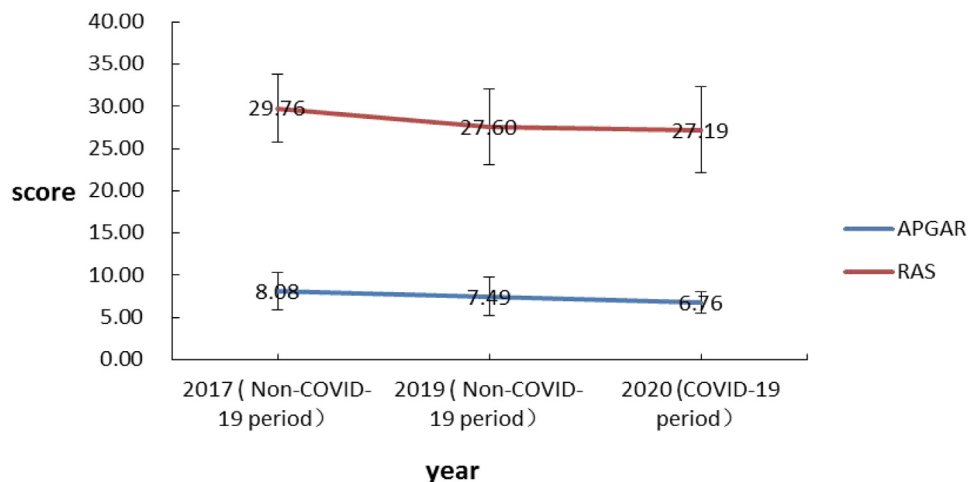

Figure 2. The change trend of Relationship Assessment Scale (RAS) and adaptation, partnership, growth, affection, resolve (APGAR) scale score.

Table 2. Clustered multiple linear regression models explaining RAS by sociodemographic factors, sexual behavior factors, and family function (n = 284)

Independent variables*	Beta$^{\varphi}$	P Level	Adjusted R2†	Independent contribution‡%
Cluster 1				
Age groups (21~30)	−0.165	0.045		
Age groups (31~44)	−0.218	0.012		
Total			0.037	13.0
Cluster 2				
Sexual satisfaction	0.215	0.006		
Quality of sexual life (good)	0.183	0.010		
Total			0.146	38.2
Cluster 3				
Family function (good)	0.544	<0.001		
Total			0.285	48.8

RAS = the Relationship Assessment Scale.
Enter regression was applied in the multiple linear regression analysis.
*Only variables with $P < .05$ were included in the model.
†Beta is the standardized regression coefficient derived from the multiple linear regression, indicating the change in standard units of dependent variable for each increase of 1 standard unit in the independent variable, controlling for all other independent variables. Adjusted R2: adjusted coefficient of determination.
‡The independent contribution of each cluster of predictors to the variation in RAS calculated as individual corresponding R2change/total R2 change in each final model × 100%.

independent contributions on intimacy. Consequently, these might be a major determinant of intimacy in young-aged individuals.

The results showed a decrease in sexual frequency in 43.3% of subjects during confinement compared with those before the COVID-19 outbreak, based on self-reports. However, sexual desire, satisfaction, and quality of sex remained unchanged in the majority of the population. Domestic researcher Li Weiran's results showed that sexual desire, sexual frequency, sexual quality, and number of sexual partners all declined during the period.[21] But the results of an Italian study show an increase in sexual desire between men and women during the COVID-19 outbreak.[32] The difference in results may be related to the culture of different countries.[33] Compared with the foreign countries, Chinese citizens are relatively conservative in their thoughts and shy about expressing their sexual desire. We found that, on intimacy score, good sexual life quality was higher than general. And there was a remarkable correlation between sexual life

quality and intimacy. In real life, a large number of people choose to keep silent and not to express their feelings to their partners when they encounter some sexual problems in China.[34] Over time, these problems will accumulate and lead to the deterioration of sexual quality and thus affect intimacy. Besides, couples became less intimate with each other as they get older.[35] Our study found out that sexual satisfaction was positively correlated with partner intimacy during COVID-19 ($P < .05$). This finding was contrary to the previous studies which have suggested that sexual activity had nothing to do with intimacy between male and female.[36] However, a study measuring intimacy, passion, and sexual satisfaction in heterosexual couples for 21 consecutive days showed that increased intimacy was associated with increased sexual satisfaction, relationship enthusiasm, and frequency.[35] In addition, another study of 349 community women found out that those who were sexually satisfied had higher levels of intimacy with their partners than those who were
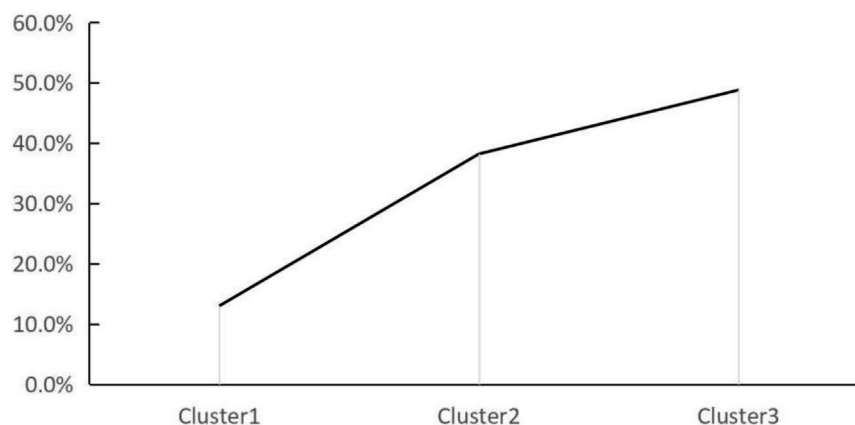

Figure 3. The panel shows the independent contributions of the 3 clusters to the Relationship Assessment Scale (RAS).

sexually dissatisfied.[37] That probably is because sexual satisfaction was closely related to communication between partners, and intimacy between partners led to a better sexual life.[38] When sexual life was satisfied, the intimacy between partners was more satisfactory.[39] When sexual satisfaction between partners is achieved, positive emotions are generated, and positive partner behaviors are displayed.[40] These positive feelings on relationships can predict more intimacy between partners. Our results suggested that sexually related factors (sexual quality, sexual satisfaction) were predictors of greater intimacy. Hence, the health-care sector should attach importance to sexual health education and information dissemination, to guide young people to establish correct sexual values and moral values and to provide them with assistance when necessary. In addition, people are encouraged to actively express their feelings when they encounter sexual problems to promote the development of a good sex life, to reduce conflict between partners, and to improve intimacy.

The summarized score of RAS scales was 27.19 ± 4.49. Owing to a lack of constant modulus data for comparison, intimacy between men and women decreased during COVID-19 compared with previous studies.[28,41] Existing reports demonstrated an increased risk of marital conflict and disintegration during COVID-19.[16] This may be related to the decrease of intimate relationship. Studies showed that among people aged between 20 and 39 years, the intimacy of the partner was more susceptible to some external factors. However, after 40 years of age, health and other internal factors affected the intimate relationship between partners more than external factors.[42] These external problems and health factors may lead to a decrease in intimacy between male and female.

APGAR scale summary score was 6.76 ± 2.28 indicating moderate family dysfunction. There was a small decrease in family functioning scores compared with previous studies. Hill was to make a clear link between external stress and family stability,[43] and subsequent empirical studies showed that stressful events, such as military service and poverty, were associated with an increased risk of family dysfunction. During the COVID-19 period, people were faced with the risk of unemployment and decline in financial income, as well as difficulties in medical treatment and psychological problems such as worrying about their health, and communication among family members will decrease accordingly. All these factors may lead to decreased family functioning.

During this period, family dysfunction affected intimacy between men and women. Specifically, our study revealed that participants with good family function had a higher degree of intimacy than those with severe family dysfunction. On the one hand, it might be because they were experiencing a stressful period of family life and were forced to isolate at home or elsewhere, where physical and emotional contact was confined to the living unit.[44] On the other hand, economic instability, school closure, and lack of education may bring psychological distress and related worries about family in lockdown.[45] During a pandemic, these stressors were much more likely to threaten the functioning of the family and the relationship between partners, potentially leading to an increased risk of marital breakdown. In overseas studies, there was an increase in domestic violence during this period, which might also be a factor leading to family dysfunction and reducing partner intimacy.[46–49] To sum up, the stressors associated with the pandemic have a negative impact on family function and intimacy between men and women. During the epidemic, while maintaining their own health, more attention should be paid to the requirements of family development, especially families with dysfunction. Implementation strategies should be developed from a public health perspective and explore effective integrated interventions to improve family functioning and intimacy between partners.

Our results also indicated that the independent contributions of the third cluster (family function) to male-female intimacy were even larger than those of sociodemographic factors and sexual-behavior factors. This finding can be partly explained by the fact that family function is a major determinant of intimacy between male and female in young populations. In a number of studies, it has been suggested that personal intimacy depends to some extent on the past experience of the original family relationship.[50] In our study, the effect of family on partner closeness might be attributed to family structure, family economy, family education, and parenting style. The Halima study showed that family breakdown has a negative impact on adolescents' identity and development of intimate relationship.[51] In this case, harmonious family functions were particularly important to them.

Our work suggested that during the COVID-19 epidemic, sexual behavior has changed compared with the period before, and family function was moderately impaired, all of which were closely related to intimacy between partners. In order to promote the deepening of the intimate relationship between partners, family background information (family structure, quality of family life, and so on) and sexual behavior—related scales should be included in the following research to provide more accurate and detailed information.

Limitations

The study presents several limitations. First, our study adopted the method of convenient sampling, with a small sample size and lack of randomization, which had definite limitations when extrapolated to other countries. Second, for the sexual behavior survey, we did not specifically measure the situation before and during the confinement, and we only researched the change of sexual behavior of the participants during the period compared with the previous period. The report results were based on the participants' self-assessment, and there might be some reporting bias. Also, we only examined the family function of the participants during the confinement period and compared this result with previous results of similar studies. Third, we have not taken into account the effect of the presence of a child on the family during confinement, and the child should be included as a variable in subsequent studies. Finally, this was a cross-sectional survey, so

the observed association should not be considered causal, and further research is required to explore the causal relationship.

CONCLUSION

We found that intimacy was, to some extent, independently and differently influenced by sexual behavior factors and family function. Therefore, in addition to looking at people's mental health, sexual health should also be looked at as a part of overall health, and we also need to intervene in the underlying factors that affect intimate relationship between partners to promote family and social harmony.

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Conflicts of Interest: The authors report no conflicts of interest.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at https://doi.org/10.1016/j.esxm.2020.100301.