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The influence of stress, social support and feminine values on the health behaviour of women in Hong Kong

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Abstract
The relationship between feminine values, cultural values, stress, social support and health behaviour among women in Hong Kong was examined in a sample of 306 women aged 18–61 years ($M = 34.77$, SD $= 10.43$). Older age and weaker identification with Chinese cultural values were predictive of engagement with risky health behaviour, older age was also associated with lower perceived levels of stress. Further post-hoc analysis explored the mediating effect of Chinese values and stress on the relationship between feminine values and health behaviour, Chinese values and stress fully mediated the relationship between feminine values and engagement with risky health behaviour. Experiencing high levels of stress did not necessarily lead to engagement in health compromising behaviour. Incorporating cultural values into health promotion campaigns may be one approach to better engagement in health promotion behaviour.

While the gender gap in life expectancy currently favours women (Rochelle et al., 2015), women have a marked disadvantage in relation to morbidity, reporting higher rates of physical and mental illness globally across all ages (Crimmins et al., 2019; Seedat et al., 2009). Life expectancy in Hong Kong has been steadily rising to the point that Hong Kong is now one of the global leaders in life expectancy (Chung and Marmot, 2020). The gender gap in life expectancy is evident in Hong Kong, where women maintain a 6-year advantage in life expectancy compared to men (The World Bank, 2020). Much of the literature is dominated by studies examining the role of masculinity in men's health behaviour, with less attention paid to the role of feminine values in

women's health, particularly outside of the Western context. The present study uses a cross-sectional approach to examine the relationship between feminine values, stress, social support, cultural values and health behaviour in a sample of Hong Kong Chinese women.

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Gender and health

Health and well-being can be impacted and affected by a broad range of personal, psychosocial and behavioural factors (Reblin and Uchino, 2008; Rochelle et al., 2015). Gender is an important social determinant of health, shaping and reproducing how men and women engage in health behaviour. Empirical research often frames women as engaging in more health-promoting behaviour, and men as engaging in more risky health behaviour (Courtenay, 2011; Mollborn et al., 2020). The link between age and health risk behaviour is relatively well established, with risky behaviour traditionally highest among late adolescents and young adults around the globe (Duell et al., 2018). However, recent research has also observed an emerging trend of greater engagement in risky health behaviour among older adults and the ageing population (de Vlieg et al., 2021; Oduro et al., 2023), which has been shown to impact negatively on the health of older adults in both developed and developing countries. Risky health behaviours, such as inadequate physical activity, smoking, excessive alcohol consumption and unhealthy diet, are strongly associated with the incidence of leading chronic diseases, including heart disease, stroke, obesity, type 2 diabetes and cancers, as well as being a major cause of death (Oduro et al., 2023; Olajide et al., 2022).

Gender is a multidimensional socio-culturally constructed concept associated with characteristics about how men and women are expected to behave and the norms and roles associated (WHO Europe, 2024). Typically expected masculine values around the world include invulnerability and independence, while typically expected feminine values include selflessness, sympathy and caring (Vader et al., 2023). The construction of gender is determined by societal norms and can be identified in aspects of daily life, such as the imbalance of caring duties falling on female family members. Gender roles have been linked to a range of health outcomes, including exposure to stressors, coping and stress response systems (Manigault et al., 2021; Mayor, 2015).

Stress, social support and health

Chronic stress impacts negatively on decision-making, which is linked with engagement in risky health behaviours, such as smoking, excessive alcohol consumption, poor diet and poor sleep hygiene, leading to more negative health outcomes (Ng et al., 2020). Social support has been linked to health promoting behaviour, acting as a buffer to stress and promoting health and well-being (Greaney et al., 2018; Uchino et al., 2018). Research has consistently found that women have larger social support networks, and broader sources of support than men (Harvey and Alexander, 2012; Rochelle, 2023). Empirical evidence has demonstrated how social support can positively influence health and lifestyle behaviour, resulting in improved mental and physical health outcomes and well-being (Britton et al., 2019; Luo et al., 2020). However, other studies have shown that despite reporting greater levels of social support, women also report higher levels of stress, more chronic stressors, and perceive stressors as more threatening compared to men (Kneavel, 2020; Remes et al., 2016; Verma et al., 2011).

Gender roles and Chinese cultural values

Differentiated social roles are important factors in the higher morbidity observed in women (Oksuzyan et al., 2010); as explained by the gender differences in stressors experienced by men and women, and the stress reaction induced (Mayor, 2015; Patwardhan et al., 2024). In Chinese societies, as in many societies around the world, the expectation of working, combined with caring for the home and family, often falls unevenly on female family members (Qing, 2020). Studies show that caregiving can negatively impact on the physical and mental health of caregivers (Tough et al., 2022). Confucian values dominate traditional

Chinese culture and of central importance is the idea of society operating on a hierarchical basis, with an emphasis on the maintenance of harmonious relationships with others, respect, filial piety and respecting the hierarchy and order of one's position (Tang et al., 2010). Filial piety is the love, respect and care demonstrated towards parents and ancestors; it has historically shaped traditional Chinese familial behaviour and caregiving (Bedford and Yeh, 2019). For example, the practice of caring for parents into older age and intergenerational living. Despite the importance of filial piety in Chinese society, the expectation and responsibility of filial duties, such as caring for elderly parents commonly falls on female family members, which has been shown to exacerbate stress and negatively impact health outcomes among Chinese women (Huang et al., 2022; Pan et al., 2022).

Hong Kong has one of the lowest fertility rates in the world (Hong Kong Census and Statistics Department, 2023). The downward fertility trend has coincided with improved educational and employment opportunities for women in Hong Kong, thought to be partly responsible for this fertility decline (Chen et al., 2015). In Hong Kong, age is revered, and linked to this are the filial duties of providing for family elders. Local studies have found that while there is increasing expectation for women to work and earn, combining parenting and paid employment with caring for family members, there is little expectation of men combining work and care in Chinese societies, thus meaning that this expectation falls unevenly on female family members (Tang et al., 2010). Previous research has found that filial piety acts as a protective factor for health behaviour among men in Hong Kong (Rochelle, 2019a). However, there is a dearth of studies examining the relationship between cultural values and health behaviour specifically among women in the Chinese context.

The present study

To summarise, the relationship between feminine values and health behaviour is not well understood. Considering the gaps in the literature and the predominance of studies conducted in a Western context, one of the aims of the present study was to examine the relationship between feminine values, social support, stress, cultural values and health behaviour in a sample of Hong Kong Chinese women. In line with previous research, it was hypothesised that:

H_1: Younger age will be associated with engagement in risky health behaviour.

H_2: Higher reported stress will be associated with engagement in risky health behaviour.

H_3: Greater levels of social support will be associated with lower engagement in risky health behaviour.

H_4: Feminine values will be associated with lower engagement in risky health behaviour.

H_5: Stronger identification with Chinese cultural values will be associated with lower engagement in risky health behaviour.

Methodology

Participants and procedures

A total of 306 women aged 18–61 years ($M = 34.77$, SD = 10.43) were recruited to the present study, which adopted an online cross-sectional design. Ethical approval was obtained before recruitment took place during a 3-month period in 2022. As the study was conducted during the height of the COVID-19 pandemic in Hong Kong, the online design suited local restrictions and recommendations in place at the time of recruitment regarding social distancing and minimisation of social contact in Hong Kong. Inclusion criteria included: women aged 18 years and over and Hong Kong Chinese ethnicity.

Participants were all Chinese, 59% were single. Around half the sample (51%) were educated to undergraduate degree level, nearly one third (32%) were educated to college level, while the remainder of women were educated up to high school (13%) or primary school

(4%), respectively. Most participants (38%) reported a monthly income over HK$20,000, 33% reported a monthly income over HK$10,000, 18% reported a monthly income of less than HK$10,000, the remaining 11% reported a monthly income over HK$30,000. A snowball sampling approach was adopted, which included publishing adverts for the study online via social media, local non-government organisations were also enlisted to assist with recruitment. All interested participants were directed to a participant information sheet online providing more detailed information about the study. The survey was hosted on QuestionPro. Those interested participants provided informed consent before going on to complete the survey online.

Measures

The online survey consisted of the following domains:

Health Behaviour was examined using the Health Behaviour Inventory (HBI: Courtenay et al., 2002). The HBI is a 46-item measuring health behaviour across the following domains: diet and fitness, substance use, preventive care, social support, safety, anger and stress, emotional control, perceived invulnerability and perceived control over health. Items are measured on a 5-point scale (1 = Always to 5 = Never) and include: '*I eat fruit and vegetable at least twice a day*'. The HBI contains a mixture of health promotion and health risk items; health promotion items are reversed so that higher scores are indicative of greater engagement in health risk behaviour. The HBI has shown good reliability and validity in Chinese contexts (Rochelle, 2019b). A composite score was calculated by summing all items. Reliability was a respectable $\alpha = 0.92$ for the total HBI score and ranged from $\alpha = 0.60$ to $\alpha = 0.82$ across the domains.

Feminine Values were examined using the Personal Attributes Questionnaire (PAQ: Spence and Helmreich, 1978), a commonly used measure of gender attributes containing 24 items equally distributed across three domains, the 8-item femininity domain was used for the purpose of the present study. Items including: '*I am able to devote myself completely to others*' are measured on a 5-point scale (0 = Not at all to 4 = Very). A composite score was calculated by summing all items with higher scores indicating greater identification with feminine values. The PAQ has shown good reliability and validity in the Chinese context (Moneta, 2010).

Stress was examined using the Perceived Stress Scale (PSS: Cohen et al., 1983). The PSS measures perceived stress during the last month and contains 14 items measured using a 5-point Likert scale (0 = Never to 4 = Very Often). Items include: '*In the last month, how often have you been upset because something happened unexpectedly*?' A composite score was calculated by summing all items with higher scores indicating greater levels of perceived stress. The PSS has shown good reliability and validity in the Chinese context (Leung et al., 2010).

Social Support was examined using the Multidimensional Scale of Perceived Social Support (MSPSS: Zimet et al., 1988). The MSPSS contains 12 items measuring social support across three dimensions: friends, family and significant others. Items are measured on a 7-point scale (1 = Strongly Disagree to 7 = Strongly Agree) and include: '*There is a special person who is around when I am in need*'. The MSPSS has been used previously in the Chinese context (Tonsing et al., 2012). A composite score was calculated by summing all items with higher scores indicating greater levels of perceived social support. In the present study reliability across the domains ranged from $\alpha = 0.92$ to $\alpha = 0.95$.

Cultural Values were examined using the Chinese Values Survey (CVS: Chinese Culture Connection, 1987). The CVS was designed to examine identification with traditional Chinese cultural values and contains 40 items, including: '*Filial piety*'. Items are scored on a 9-point

Table 1. Correlation matrix for key variables (N = 306).

Variable	1	2	3	4	5	6	7	8	9	M	SD	α
1. Age	—									34.77	10.43	—
2. Education	−0.40***	—								—	—	—
3. Income	0.58***	−0.32***	—							—	—	—
4. Marital status	−0.15**	0.50***	−0.18***	—						—	—	—
5. Health behaviour	0.15**	−0.001	0.05	−0.04	—					162.61	9.06	0.93
6. Chinese values	0.11*	−0.14*	0.06	−0.01	−0.26***	—				278.72	32.32	0.96
7. Stress	−0.22***	−0.01	−0.22***	0.18**	−0.34***	0.57***	—			43.02	12.41	0.97
8. Social support	−0.23***	−0.05	−0.20***	0.12*	−0.25***	0.61***	0.80***	—		56.98	13.50	0.97
9. Feminine values	−0.27***	.06	−0.27***	.20***	−0.18**	.54***	.75***	.76***	—	29.66	5.26	0.92

*$p \leqslant 0.05$.**$p \leqslant 0.01$.***$p \leqslant 0.001$.

scale (1 = No Importance to 9 = Supreme Importance). Higher scores reflect stronger identification with Chinese values.

Sociodemographics were examined using a number of items, including age, marital status, educational attainment and personal monthly income.

Analysis

Data analysis was conducted using IBM SPSS 27. There was no missing data in the dataset due to the online Qualtrics design of preventing continuation onto further parts of the survey without participants fully completing previous sections. Preliminary analysis included conducting a correlation matrix to examine relationships of significance among study variables. Hierarchical regression analysis was then conducted using a stepwise approach to examine the sequential effects of age (H_1), Chinese values (H_5), perceived stress (H_1), social support (H_2) and feminine values (H_3) on health behaviour. Finally, exploratory post-hoc mediation analysis was conducted using PROCESS (Hayes, 2018) to examine the mediating effects of cultural values and stress on the relationship between feminine values and health behaviour in Hong Kong women. Data were screened using the common method bias, total variance in the present study was 32.93% confirming no issue with common method bias. Data were also screened for multicollinearity, VIF values for study variables ranged between 1.00 and 3.52, indicating no issues with multicollinearlity. The estimated total sample size was 55 according to GPower for a multiple regression with a power of 0.80 given a partial R^2 of 0.02 and alpha of 0.05. The current sample size of 306 far exceeded this estimate.

Results

Preliminary analysis

A correlation matrix, including descriptive statistics are presented in Table 1. Initial analysis

Table 2. Predictors of health behaviour (N = 306).

Variable	Block 1			Block 2			Block 3			Block 4			Block 5		
	β	SE	t	β	SE	t	β	SE	t	β	SE	t	β	SE	t
Age	0.15***	0.05	2.65	0.18***	0.05	3.31	0.11*	0.05	1.95	0.13*	0.05	2.23	0.16**	0.05	2.72
Chinese values				−0.28***	0.01	−5.02	−0.13*	0.02	−1.95	−0.17*	0.02	−2.39	−0.21**	0.02	−2.83
Stress							−0.24***	0.06	−3.43	−0.33***	0.07	−3.64	−0.42***	0.07	−4.37
Social support										0.15	0.06	1.57	0.06	0.07	0.63
Feminine values													0.24**	0.15	2.70
	$\Delta R^2 = 0.02$			$\Delta R^2 = 0.08$			$\Delta R^2 = 0.03$			$\Delta R^2 = 0.01$			$\Delta R^2 = 0.02$		
	$\Delta F = 7.05^{**}$			$\Delta F = 25.22^{***}$			$\Delta F = 11.74^{***}$			$\Delta F = 2.47$			$\Delta F = 7.28^{**}$		
	$df = 1, 304$			$df = 1, 303$			$df = 1, 302$			$df = 1, 301$			$df = 1, 300$		

$*p \leq 0.05.$ $**p \leq 0.01.$ $***p \leq 0.001.$

revealed significant associations between all major variables. Age was positively associated with health behaviour, and Chinese values, suggesting greater engagement in health risk behaviour with age, and stronger alignment with Chinese values among older participants in the present study. Significant negative associations were observed between age and stress, social support and feminine values, suggesting that younger age was associated with higher perceived stress, more social support and greater alignment with feminine values. Engagement in health risk behaviour was associated with weaker identification with traditional Chinese values, lower stress, less social support and weaker identification with feminine values. Identification with Chinese values was significantly associated with higher stress, more social support and greater alignment with feminine values.

Initial analysis revealed no support for H_1, older age, not younger age was associated with risky health behaviour. H_2 predicted that higher perceived stress would be associated with risky health behaviour. However, preliminary analysis revealed that lower stress was associated with risky health behaviour, as such H_2 was also not supported. Social support was associated with less engagement in risky health behaviour, providing early support for H_3. Feminine values were associated with less engagement in risky health behaviour, thus, providing early support for H_4. A significant negative association was observed between Chinese cultural values and health behaviour, suggesting that stronger identification with Chinese cultural values was associated with lower engagement in risky health behaviour, indicating early support for H_5.

Hierarchical regression was conducted to examine the utility of age, Chinese values, stress, social support and feminine values in predicting health behaviour among a sample of Hong Kong women (see Table 2). Demographics were entered into Block 1 due to the likelihood of age influencing other

variables. Chinese values were entered into Block 2 to examine the impact of subsequent variables on the relationship between cultural values and health behaviour, stress and social support are known predictors of health behaviour and were added to Block 3, finally feminine values was inserted to Block 4. The inclusion of age into Block 1 was significant explaining 2% of the variance in health behaviour, whilst the addition of Chinese values and stress to Blocks 2 and 3 significantly explained 8% and 3% of the variance in health behaviour, respectively. The inclusion of social support into the penultimate Block 4 explained a further 1% of the variance, however, this was not significant. The inclusion of feminine values to the final Block 5 significantly predicted a further 2% of the variance. Thus, combined the model explained a total of 16% of the variance in health behaviour in the present sample.

Age, Chinese values, stress and feminine values all retained significance through the model, suggesting these variables were robust predictors of health behaviour in the present study. Older age, lower affinity with Chinese values, lower perceived stress and stronger identification with feminine values were all predictive of engagement with health risk behaviour. However, social support was not a significant predictor of health behaviour in the regression model, despite the significant association in preliminary analysis. The regression provided further confirmation that H_1 was not supported, older age was predictive of engagement in health risk behaviour. Lower perceived stress was predictive of engagement in health risk behaviour, and social support was not a significant predictor of health behaviour, meaning H_2 and H_3 were not supported. Greater identification with Chinese values was predictive of lower engagement in risky health behaviour, meaning H_5 was fully supported. However, feminine values were predictive of engagement in health risk behaviour in the regression model, despite a negative association in the correlation, meaning that H_4 was not supported.

Given the commonality of multigenerational living and the imbalance of filial piety caring for elderly parents falling predominantly on the shoulder of women in Chinese society, exploratory post-hoc analysis was conducted to examine how stress and Chinese values mediate the relationship between feminine values and health behaviour (see Figure 1). Age was included as a control variable in the mediation model due to its statistical association with health behaviour in earlier analyses. Feminine values (X), health behaviour (Y), Chinese values (M_1), stress (M_2) and age (*covariate*) were entered into PROCESS Model 6 (Hayes, 2018). The path between feminine values and health behaviour was significant and significant paths were also observed among the mediators. Bootstrapping approach was used to directly assess the significance of the mediating effects. Results indicated that the total effect of feminine values on health behaviour was significant ($\beta_{total} = -0.26$, SE = 0.10, $p = 0.01$), the direct effect was also significant ($\beta_{direct} = 0.45$, SE = 0.14, $p < 0.01$). The model was significant in its prediction of health behaviour ($F = 6.88$, $p = 0.001$, $R^2 = 0.04$), Chinese values and stress fully mediate the relationship between feminine values and health behaviour ($IE_{total} = -0.70$, SE = 0.12, 95% CI: -0.96, -0.48).

Findings indicate that women scoring higher on feminine values are more likely to identify with Chinese cultural values and have high perceived stress levels. Hong Kong women through their identification with Chinese cultural values and perceived stress levels are less likely to engage in risky health behaviour. Feminine values were significantly associated with Chinese values (Path a^1: $\beta = 3.82$, SE = 0.29, $p < 0.001$) and stress (Path a^2: $\beta = 1.37$, SE = 0.11, $p < 0.001$), indicating that identification with feminine values is associated with greater identification with Chinese cultural values and higher perceived stress. The relationship between Chinese values and health behaviour was significant (Path b^1: $\beta = -0.05$, SE = 0.02, $p < 0.01$), suggesting that weaker identification with Chinese values is associated
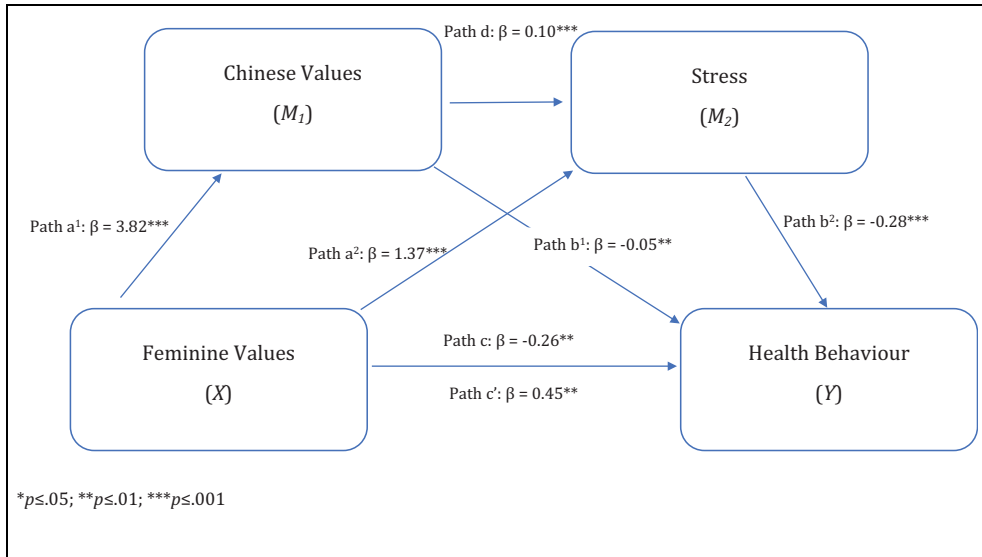
Figure 1. Serial mediation model examining the mediating effects of Chinese cultural values and stress on the relationship between femininity and health behaviour, controlling for age ($N = 306$).
$*p \leqslant 0.05.**p \leqslant 0.01.***p \leqslant 0.001.$

with engagement in risky health behaviour. Stress was negatively associated with health behaviour (Path b^2: $\beta = -0.28$, SE = 0.06, $p < 0.001$), reconfirming the relationship between lower perceived stress and engagement with health risk behaviour in the present study.

The relationship between the two mediators was also significant (Path d: $\beta = 0.10$, SE = 0.02, $p < 0.001$). The total effect of X on Y was significant (Path c′: $\beta = 0.45$, SE = 0.14, $p = 0.01$), as was the direct effect (Path c: $\beta = -0.26$, SE = 0.10, $p < 0.001$), whilst all indirect effects were also significant. The indirect effect of feminine values on health behaviour via Chinese values was significant (IE_1: $E = -0.21$, SE = 0.08, 95% CI: $-0.36, -0.05$); participants who identified with feminine values were more likely to identify with Chinese cultural values, and through stronger identification with Chinese values were less likely to engage in risky health behaviour. The indirect effect via stress was also significant (IE_2: $E = -0.04$, SE = 0.01, 95% CI: $-0.07, -0.02$); participants who identified with feminine values were more

likely to feel stressed, and through higher perceived levels of stress were less likely to engage in risky health behaviour. There was also a significant indirect effect via Chinese values and stress (IE_3: $E = -0.01$, SE = 0.003, 95% CI: $-0.02, -0.01$); participants who identified with feminine values were more likely to identify with Chinese cultural values and perceive more stress and through this, less likely to engage in risky health behaviour. Chinese values and stress independently and collectively mediate the relationship between feminine values and engagement in risky health behaviour in the present study, when controlling for age. Thus, the post-hoc exploratory mediation model demonstrates that overall, there is evidence of a significant mediated effect of feminine values on health behaviour via Chinese values and stress in the present sample of Hong Kong women.

Discussion

The present study examined the relationship between feminine values, stress, social support,

Chinese cultural values and health behaviour in a sample of adult women in Hong Kong. It was hypothesised that younger age (H_1) and higher perceived levels of stress (H_2) would be associated with greater engagement in risky health behaviour. Social support (H_3), feminine values (H_4) and identification with Chinese cultural values (H_5) were all predicted to be associated with lower engagement in risky health behaviour. Analyses revealed that H_1 was not supported, younger age was not associated with risky health behaviour. Indeed, contrary to predictions older age was a significant predictor of engagement with risky health behaviour. Lower perceived levels of stress were also associated with risky health behaviour, this finding contradicted H_2. Social support was significantly negatively associated with health behaviour in the preliminary analysis, meaning that lower levels of social support were associated with engagement with risky health behaviour. However, regression analysis revealed that social support was not a significant predictor of health behaviour. Identification with Chinese cultural values was predictive of lower engagement in risky health behaviour, supporting H_5. Further exploratory post-hoc analysis was conducted to examine the mediating effects of Chinese values and stress on the relationship between feminine values and health behaviour, controlling for age. Mediation analysis revealed that Chinese cultural values and perceived stress fully mediated the relationship between feminine values and health behaviour in the present sample of Hong Kong women.

Research has previously established that younger individuals are more likely to engage in risky behaviour compared to older individuals (Duell et al., 2018; Rolison et al., 2014). However, in the present study younger women were significantly less likely to engage in risky health behaviour. This echoes local findings examining constructions of masculinity and health behaviour of men in Hong Kong, where older men were significantly more likely to engage in risky health behaviour than younger

men (Rochelle et al., 2015). A recent study conducted by the International Food Information Council (IFIC, 2023) observed that younger generations are more health conscious and more informed about food, health and nutrition compared to previous generations. A recent British study found that younger people are more likely to be vegan than older age groups, more health conscious, and drink less alcohol than previous generations, while an observed reduction in engagement in risky behaviours compared to past generations of young people was also evident (BritainThinks, 2019). As such, the present finding of an association with younger age and lower engagement in risky health behaviour is in line with recent research which has observed an increasing trend in engagement in more healthy behaviour among younger generations.

Lower perceived stress was predictive of engagement with risky health behaviour in the present study. This could be linked with the earlier finding of older age and engagement with risky health behaviour, and the observed association between older age and lower perceived stress. Hong Kong is typically known as a fast-paced society with a demanding and stressful academic and working culture (Siu et al., 2020; Tsang and Lian, 2021). Younger people may perceive greater levels of stress due to academic pressures and the pressures of being early in their career, not to mention culture-specific fertility pressures with Chinese culture (Qing, 2020). However, younger women in the present study were less likely to engage in risky health behaviour than older women, despite perceiving higher stress. Although research has often found that stress is associated with compromised health behaviour and engagement in risky behaviour (Deeks et al., 2009; Ng et al., 2020), recent observations of a more health conscious and health aware younger generation (BritainThinks, 2019; IFIC, 2023), could mean that even when perceiving high levels of stress this does not necessarily equate to indulging in risky behaviour due to being more health conscious. This was further emphasised in the

indirect effect via stress in the mediation model. Participants who identified with feminine values were more likely to feel stressed, and through (or despite) higher perceived stress levels, were less likely to engage in risky health behaviour.

Previous research has linked social support to health promoting and health protective behaviour (Greaney et al., 2018; Uchino et al., 2018). However, in the present study although a significant association was observed between lower levels of social support and health risk behaviour in the correlation, regression analysis revealed that social support was not a significant predictor of health behaviour in the present study. One explanation for this could be the deeply embedded Chinese cultural association of food and wellbeing (Ho, 1985; Ma, 2015). The use of food and dietary adjustment for disease prevention, health promotion and wellbeing in Chinese culture (Koo, 1987) may mean that social support is less important in guiding health behaviour more broadly. However, further exploration is required to clarify this relationship. One interesting finding was the difference in association between feminine values and risky health behaviour in the preliminary correlation analysis and subsequent regression analysis. In the correlation a negative association was observed indicating that weaker identification with feminine values is associated with engagement with risky health behaviour. However, in the regression a positive association was observed. Feminine values were entered into the model last, as such the influence of previously inserted variables could have impacted on this association, suggesting that Chinese values and perceived stress may mediate the relationship between feminine values and risky health behaviour.

The mediation model provided further insight into women's health behaviour. Chinese cultural values and perceived stress fully mediated the relationship between feminine values and health behaviour. The overall model was significant, all paths were significant and all indirect effects were also significant. The importance of Chinese cultural values on health behaviour is emphasised in its indirect association with health behaviour. Mediation analysis revealed that participants who identified with feminine values were more likely to identify with Chinese cultural values, and through stronger identification with Chinese cultural values were less likely to engage in risky health behaviour. This supports previous studies that have identified protective benefits of Chinese cultural associations with food and wellbeing (Ho, 1985; Koo, 1987; Ma, 2015) and health promoting behaviour. Identification with feminine values was predictive of greater identification with Chinese cultural values in the present study. The dominance of Confucian values in Chinese societies with an emphasis on the maintenance of harmonious relationships with others and filial piety could be seen to align nicely with traditional feminine values such as caring for others and selflessness. This alignment between feminine values and Chinese values is interesting and warrants further investigation.

Limitations and conclusions

Findings from the present study have important implications. Healthy lifestyle and lower engagement in risky behaviour is an important feature of disease prevention and improved public health. The present study provided preliminary evidence consistent with recent research observing a more health conscious and health aware younger generation (Britain-Thinks, 2019; IFIC, 2023), engaging in more health promoting and health protective behaviour compared to older generations. This highlights the importance of age in shaping health behaviours. Whilst previous studies have emphasised the importance of social support in positively influencing health and lifestyle behaviour (Britton et al., 2019; Luo et al., 2020), the present study found no such association between social support and health behaviour. The importance of Chinese cultural values on

health behaviour is also emphasised. Whilst the study demonstrated that even when experiencing high perceived levels of stress, this did not deter from engagement in healthy behaviour.

The present study makes a meaningful contribution to the literature on femininity and health, providing insight into the relationship between feminine values and health behaviour in a Chinese context. However, there are limitations which must be acknowledged. The cross-sectional design of the study means that how relationships between key variables change over time remains unknown through the findings of the present study, while the use of a self-report survey may present issues of social desirability. Moreover, the study was comprised of a sample of heterosexual adult women, and as such it is unclear whether a more sexually diverse sample would yield similar results. Another limitation that must be noted is the possibility of the reverse direction of effects for some associations as detailed.

Findings demonstrated the positive influence of feminine values on the health behaviour of women in Hong Kong, whilst also revealing an alignment between feminine values and traditional Chinese cultural values in the present sample. Previous studies have identified age-specific stressors linked to women's pressures to marry and have children in the Chinese context (Chen et al., 2015; Qing, 2020). It would be interesting to explore longitudinally how changes in stressors impact on the health behaviour of Chinese women as they age, particularly given that stress was associated with lower engagement in risky health behaviour in the present study. Findings revealed the protective influence of Chinese cultural values on health behaviour. This suggests that incorporating cultural values into health promotion campaigns may potentially be one effective approach to engage the society and local community in health promotion behaviour. Empirical research has often demonstrated an association between younger age and greater propensity to engage in risky behaviour (Duell et al., 2018). In the

present study, risky health behaviour was associated with older not younger age. These findings follow an emerging trend of greater engagement in risky health behaviour in older adults, including recent empirical evidence demonstrating a global rise in sexually transmitted diseases among older populations (Fu et al., 2024). The present findings emphasise the value of public health campaigns also targeting older adults as well as younger populations in reducing risky health behaviour.

Author contributions

The second author was responsible for study conception, material preparation and data collection. Data analysis was performed by both authors. The first draft of the manuscript was written by the corresponding author, both authors contributed to and commented on previous versions of the manuscript and approved the final manuscript.

Data sharing statement

The current article includes complete raw dataset collected in the study; data files will be automatically uploaded to the Figshare repository.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical approval was obtained from the College of Liberal Arts and Social Sciences Ethics Committee (Ref: SSA5790-202109-03).

Informed consent

All participants provided informed consent before taking part in the study.

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