The influence of perceived stress on work–family conflict and mental health: the moderating effect of person–environment fit

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Aim This study examines whether higher perceived stress among female hospital workers can result in more serious work–family conflict (WFC) and poorer mental health, and also identifies the role that person–environment (P-E) fit plays in moderating these relationships.
Background Female hospital workers with higher perceived stress tend to report greater WFC and worse mental health than others with less perceived stress. A better fit between a person and her environment may lead to lower perceived stress. As a result, she may experience less WFC and better mental health.
Methods This study adopts a longitudinal design with 273 participants, all of whom are employed by hospitals in Taiwan. All hypotheses are tested using hierarchical regression analyses.
Results The results show that perceived stress is an effective predictor of WFC and mental health status, whereas the P-E fit can moderate these relationships.
Conclusion Hospitals should pay more attention to the negative effects of perceived high stress on the WFC levels and mental health of their female employees. The P-E fit can buffer effectively the impact of perceived stress on both WFC and mental health.
Implications for nursing management If hospitals can adopt appropriate human resource management practices as well as monitor and manage the P-E fit continuously, they can better help their employees to fit into the overall hospital environment.

Keywords: mental health, perceived stress, person-environment fit, work–family conflict

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Introduction

Over the past three decades, scholars have focused their attention on research topics relating to work–family conflict (WFC) (Cortese *et al.* 2010). Researchers have found that a high level of WFC has a number of effects, including lowered job satisfaction and reduced commitment to the organisation, and increased turnover intention (Allen *et al.* 2000, Carlson *et al.* 2011).

WFC commonly appears as an antecedent for psychological distress and mental health problems in specific occupational groups (Hämmig & Bauer 2009, Carlson *et al.* 2011). Poor employee mental health can affect organisations, through reduced productivity and increased staff absences (Collins *et al.* 2005). Therefore, it is important to raise the awareness of WFC and deal effectively with its effects on the workplace.

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Although the literature (Yildirim & Aycan 2008, Cortese *et al.* 2010, Mark & Smith 2011) recognizes that job stress has an influence on employees' WFC and mental health, few studies actually examine the negative effect of perceived stress on employees' WFC and mental health. To narrow this gap in the literature, this study explores whether perceived stress can effectively predict employees' WFC and mental health. The study also examines whether a person–environment (P-E) fit can moderate these relationships. It takes into consideration the results found in the existing literature: that people who have a better P-E fit feel less threatened when confronted by stressful events (Edwards & Rothbard 2005, Yang *et al.* 2008, Lu 2011).

Literature review

The relationship between perceived stress, WFC and mental health

According to the definition of Greenhaus and Beutell (1985), WFC refers to a form of inter-role conflict in which role pressures from the work and family domains are mutually incompatible so that participation in one role is made more difficult by participation in another role.

Previous studies have shown that job stressors and work demands are related to WFC (Yildirim & Aycan 2008, Cortese *et al.* 2010). According to the integrated job stress model proposed by Lu (1997), stress perception is a significant mediating variable between potential stressors and the outcome of the stress response. Some studies have found a significant positive correlation between perceived stress and WFC (Lourel *et al.* 2009, Michel *et al.* 2010). Lu *et al.* (2001) found that in workplaces in Taiwan, China and Hong Kong, the poorer mental health indicated by the research subjects was mostly related to a high perception of pressure. Other studies have also found a significant negative correlation between perceived stress and mental health (Elkins *et al.* 2010, Smith *et al.* 2010). Therefore, based on the preceding review of the literature, the level of perceived stress could influence both WFC and mental health.

The moderating effect of person–environment (P-E) fit on the relationships between perceived stress and both WFC and mental health

Strategies for effectively moderating the relationships between perceived stress and both WFC and mental health have become a salient topic with hospital management. Numerous studies have begun to address the influence of person–environment (P-E) fit on stress (Kristof-Brown *et al.* 2005, Yang *et al.* 2008, Lu 2011).

Person-environment (P-E) fit is the compatibility of a person's characteristics with those of their work environments (Kristof-Brown *et al.* 2005). The P-E fit encapsulates different types of fit such as person–organisation fit, person–job fit, person–supervisor fit and person–team fit (Kristof 1996). Person–organisation fit refers to the compatibility between an individual and his or her organisation; a fit exists when aspects such as organisational norms, values, and the reward system meet the person's needs, values and objectives (Kristof 1996). Person–job fit refers to the match between the knowledge, skills and abilities of a person and his or her job, or the match between the desires of a person and the attributes of a job (Edwards 1991). The person–supervisor fit refers to the compatibility between a person and his or her supervisor, and the elements of compatibility may include characteristics such as: supervisor's leadership style, personal characteristics, values and interests (Kristof 1996). The person–team fit is the match between a person and his or her team (Kristof 1996).

According to the P-E fit theory, perceived stress is a subjective appraisal, indicating that supplies of an environment do not meet a person's needs, or the abilities of a person do not meet the demands of their environment (Edwards & Rothbard 2005). Many different studies were conducted to understand the relationship between stress and the various types of P-E fit. Saks and Ashforth (1997) have found that person–organisation fit influenced new employees in terms of job satisfaction, stress and turnover. Hecht and Allen (2005) have concluded that from the perspective of the person–job fit model, high psychological strain occurred when the job failed to supply opportunities to meet a person's preferences. Furthermore, van Vianen *et al.* (2011) found that the person–supervisor fit can positively predict the quality of the leader–employee exchange relationship. High quality leader–member exchange relationships are characterized by a high level of mutual trust, respect, liking, interaction and support (Thomas & Lankau 2009). Thompson and Prottas (2006) found that support from supervisors and colleagues can significantly reduce stress, turnover rates and WFC. Therefore, higher compatibility between a person and his or her supervisor could result in less perceived stress. In their study on the person–team fit, Werbel and Johnson (2001) found that members who exhibit a good

person–team fit tend to receive more support from his or her team members. Thompson and Prottas (2006) suggested that support from team members can effectively lower job stress. Based on the preceding review of the literature, the P-E fit may help to reduce the detrimental effects of perceived stress on WFC and mental health.

Aims and hypotheses

The aim of this study was to examine whether higher perceived stress of female hospital workers could result in more serious WFC and have a negative impact on mental health. In addition, this study also examined the moderating effect of the person–environment (P-E) fit in the relationship between perceived stress and both WFC and mental health. The following hypotheses were tested.

(1) Perceived stress positively predicts WFC.
(2) Perceived stress negatively predicts mental health.
(3) The P-E fit moderates the relationship between perceived stress and WFC, such that the positive association between perceived stress and WFC is weaker for employees who perceived a better P-E fit than those who perceived a worse P-E fit.
(4) The P-E fit moderates the relationship between perceived stress and mental health, such that the negative association between perceived stress and mental health is weaker for employees who perceived a better P-E fit than those who perceived a worse P-E fit.

Methods

Sample and data collection

This study used a longitudinal design to examine the relationships among all variables. We used convenience sampling and distributed 400 questionnaires to female hospital workers in two medical centres, five district hospitals and one regional hospital in Taiwan through two distribution stages. Prior to distributing the first questionnaires, we requested graduate students from our department who were working at the target hospitals to distribute the questionnaires to their female nursing and administrative staff colleagues.

We requested that respondents use the same identifiable code on the upper-right corner on both questionnaires, as this was necessary for use during data compilation. During this process, all participants were guaranteed confidentiality.

We distributed the first questionnaire, and asked the respondents questions that helped in measuring perceived stress, person–environment fit, job stress, WFC and demographics. In total 316 valid questionnaires were returned. The second questionnaire was distributed to the same respondents 2 months after the first survey. This survey measured the respondents' WFC and mental health. In total 282 valid questionnaires were returned. Cases without complete matched data across the two time points were removed from the study. The final sample consisted of 273 respondents, including 155 nurses and 118 administrative staff, representing a valid response rate of 68%. All of the participants were females, with a mean age of 32.70 years (standard deviation 6.43). Of these, 52.4% were unmarried, 80.6% held non-management positions and 54.2% had a college-level education. In terms of occupation, 56.8% were nurses, while 43.2% were administrative staff members. Data were collected in November 2009 and January 2010 in separate months.

Instruments

Perceived stress was measured by one 14-item scale developed by Cohen *et al.* (1983). Each item was rated on a 6-point Likert scale ranging from 1 (never) to 6 (very often). Higher scores indicate higher levels of perceived stress. This measure has an adequate internal consistency at $\alpha = 0.84$, 0.85 and 0.86 for two college student samples and one community smoking-cessation programme sample (Cohen *et al.* 1983).

The measurements of person–environment (P-E) fit are the integration of various types of fit (e.g. person–organisation fit, person–job fit, person–supervisor fit and person–team fit) (Kristof 1996). Both person–organisation fit measurement and person–job fit measurement were developed by Cable and DeRue (2002). Person–organisation fit is defined as the congruence of people and organisations' characteristics. Person–job fit is classified into a demands–abilities perspective and a needs–supplies perspective.

Person–supervisor fit measurement and person–team fit measurement were adapted from Chuang and Su's (2005) person–supervisor fit scale and person–team fit scale which are based on person–organisation fit scale (Cable & DeRue 2002). This study substituted the word 'supervisor' or 'team' for 'organisation' in the original items. These scales use value congruence between person and their supervisor or person and their team.

Each of the five dimensions of P-E fit (person–organisation fit, demands–abilities fit, needs–supplies fit, person–supervisor fit and person–team fit) has three items. Each item is rated on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Each subscale proved to have a good internal consistency at $\alpha = 0.94$, $\alpha = 0.89$, $\alpha = 0.93$, $\alpha = 0.92$ and $\alpha = 0.89$; respectively (Chuang & Su 2005). We therefore combined the five dimensions into one P-E fit scale. High scores indicate a better P-E fit.

The WFC was measured with a 5-item scale developed by Netemeyer *et al.* (1996). Each item is rated on a 6-point Likert scale ranging from 1 (very disagreed) to 6 (very agreed). Higher scores indicate greater WFC. This measure has an adequate internal consistency at $\alpha = 0.87$.

Mental health was measured with Lu *et al.*'s (1999) short-form occupational stress indicator. The mental health subscale is a 12-item scale that assesses contentment, resilience and peace of mind. This 6-point Likert scale used reversed items from 6-point (very disagree) to 1 point (very agree). Higher scores represented better mental health. This subscale proved to have good internal consistency at $\alpha = 0.81$ (Lu *et al.* 1999).

In addition, job stress and demographic variables such as marital status, age and position were expected to influence WFC and mental health (Chu 2010, Cohen & Liani 2009, Cortese *et al.* 2010, Netemeyer *et al.* 1996, Su *et al.* 2009, Yildirim & Aycan 2008), we controlled for these before measuring the predictive effect of perceived stress on the outcomes of interest. Job stress was measured by a short version of Karasek's (1985) job content questionnaire (Furda 1995). Each item is rated on a 6-point Likert scale ranging from 1 (very disagreed) to 6 (very agreed). Higher scores mean more job stress. This measure has an adequate internal consistency at $\alpha = 0.74$ (Bakker *et al.* 2003). We include WFC at time 1 as a potential predictor of WFC at time 2 and mental health.

Data analysis

The proposed model was assessed with a hierarchical regression using the Statistical Package for the Social Sciences 18.0 for Windows (SPSS Inc., Chicago, IL, USA). To test the reliability of the data, Cronbach's alpha was employed. Pearson's correlation was used to test the relationships between the various variables.

Results

The internal-consistency reliability coefficients are shown along the main diagonal in Table 1, and indicate that all the measurements had acceptable internal consistency, with Cronbach's alpha scores as follows: 0.76 (five items) for the job stress, 0.90 (five items) for the WFC at time 1, 0.81 (14 items) for the perceived stress, 0.91 (15 items) for the person–environment (P-E) fit, 0.94 (five items) for the WFC at time 2 and 0.88 (12 items) for the mental health.

Correlation analysis (Table 1) demonstrated that there were significant correlations between such factors as job stress, WFC at time 1, perceived stress, P-E fit, WFC at time 2 and mental health.

We tested hypotheses 1, 2, 3 and 4 by the hierarchical regression and these results are shown in Table 2. For the first step, the control variables accounted for a significant portion of the variance in WFC at time 2 (36%) and mental health (15%). The marital status variable (one, married; two, unmarried) and the position variable (one, administrative staff; two, nurses) were set as dummy variables and age as a continuous variable. Marital status negatively predicted WFC at time 2 ($\beta = -0.12$, $P < 0.05$), whereas position posi-

Table 1
Descriptive statistics and correlations among study variables

Variable	*1*	*2*	*3*	*4*	*5*	*6*
1. Job stress	(0.76)					
2. WFC at time 1	0.44**	(0.90)				
3. Perceived stress	0.42**	0.37**	(0.81)			
4. P-E fit	−0.33**	−0.29**	−0.41**	(0.91)		
5. WFC at time 2	0.46**	0.50**	0.39**	−0.28**	(0.94)	
6. Mental health	−0.31**	−0.24**	−0.41**	0.46**	−0.40**	(0.88)
Mean	3.94	3.40	3.43	3.73	3.44	3.58
SD	0.72	0.96	0.51	0.62	1.04	0.77

Cronbach's alphas appear on the diagonal. WFC at time 1, work–family conflict at time 1; P-E fit, person–environment fit; WFC at time 2, work–family conflict at time 2; $n = 273$.
**$P < 0.01$.

Table 2
Regressions analysis on the WFC at time 2 and mental health

	WFC at time 2				*Mental health*			
Dependent variable	*Step 1*	*Step 2*	*Step 3*	*Step 4*	*Step 1*	*Step 2*	*Step 3*	*Step 4*
Independent variable	*Beta*	*Beta*	*Beta*	*Beta*	*Beta*	*Beta*	*Beta*	*Beta*
Marital status	−0.12 (−2.02)*	−0.14 (−2.42)*	−0.15 (−2.58)**	−0.14 (−2.50)*	−0.06 (−0.87)	−0.02 (−0.34)	0.02 (0.36)	0.02 (0.27)
Age	−0.05 (−0.87)	−0.04 (−0.60)	−0.03 (−0.55)	−0.03 (−0.49)	0.16 (2.42)*	0.14 (2.11)*	0.12 (2.01)*	0.12 (1.96)*
Position	0.17 (3.40)**	0.17 (3.43)**	0.17 (3.51)**	0.17 (3.47)**	−0.01 (−0.10)	−0.00 (−0.07)	−0.02 (−0.39)	−0.02 (−0.34)
Job stress	0.31 (5.57)**	0.25 (4.42)**	0.24 (4.20)**	0.25 (4.37)**	−0.25 (−3.93)**	−0.16 (−2.44)*	−0.11 (−1.78)	−0.12 (−1.93)
WFC at time 1	0.33 (6.01)**	0.29 (5.18)**	0.28 (4.94)**	0.27 (4.85)**	−0.14 (−2.20)*	−0.07 (−1.08)	−0.02 (−0.35)	−0.02 (−0.24)
Perceived stress		0.18 (3.25)**	0.16 (2.79)**	0.16 (2.77)**		−0.30 (−4.84)**	−0.21 (−3.47)**	−0.21 (−3.46)**
P-E fit			−0.07 (−1.35)	−0.06 (−1.01)			0.32 (5.46)**	0.30 (5.11)**
Perceived stress × P-E fit				−0.10 (−2.15)*				0.11 (2.02)*
R^2	0.36	0.39	0.39	0.40	0.15	0.22	0.30	0.31
Adjusted R^2	0.35	0.37	0.37	0.38	0.13	0.20	0.28	0.29
R^2 change	0.36**	0.02**	0.00	0.01*	0.15**	0.07**	0.08**	0.01*
F	30.15**	27.79**	24.15**	22.00**	9.39**	12.38**	16.01**	14.68**

Marital status 1, married; 2, unmarried; position 1, administrative staffs; 2, nurses; WFC at time 1, work–family conflict at time 1; WFC at time 2, work–family conflict at time 2; P-E fit, person–environment fit; $n = 273$. *$P < 0.05$, **$P < 0.01$.

tively predicted WFC at time 2 (β = 0.17, $P < 0.01$). This means that married staff had a greater WFC than unmarried staff, and nurses had a greater WFC than administrative staff. In addition, job stress positively predicted WFC at time 2 (β = 0.31, $P < 0.01$), and negatively predicted mental health (β = −0.25, $P < 0.01$). This means that staff with higher job stress had greater WFC and worse mental health than those with less job stress. The WFC at time 1 positively predicted WFC at time 2 (β = 0.33, $P < 0.01$), and negatively predicted mental health (β = −0.14, $P < 0.01$). This means that the respondents who perceived greater WFC at time 1 experienced greater WFC at time 2 and worse mental health. Age positively predicted mental health (β = 0.16, $P < 0.05$). This means that older nurses and administrative staff had better mental health than younger staff.

Perceived stress was added to the regression model for the second step. It showed that perceived stress accounted for an additional 2% of the variance in WFC at time 2 at the statistical significance level of $P < 0.01$, and an additional 7% of the variance in mental health at the statistical significance level of $P < 0.01$. Additionally, perceived stress positively predicted WFC at time 2 (β = 0.18, $P < 0.01$) and negatively predicted mental health (β = −0.30, $P < 0.01$). This means that staff with higher perceived stress had greater WFC and worse mental health than those with less perceived stress. These findings provide support for hypotheses 1 and 2.

For the third step, P-E fit was added to the regression model. It showed that P-E fit accounted for an additional 8% of the variance in mental health at the statistical significance level of $P < 0.01$, but no additional variance in WFC at time 2. Additionally, P-E fit positively predicted mental health (β = 0.32, $P < 0.01$). This means that staff with a better P-E fit had better mental health than those with a worse P-E fit.

For the fourth step, the multiplicative term of perceived stress and P-E fit was added to the regression model. It showed that the moderated interaction term accounted for an additional 1% of the variance in WFC at time 2 at the statistical significance level of $P < 0.05$, and 1% of the variance in mental health at the statistical significance level of $P < 0.05$, where the perceived stress times P-E fit interaction negatively predicted WFC at time 2 (β = −0.10, $P < 0.05$) and positively predicted mental health (β = 0.11, $P < 0.05$).

The differential effect of high and low P-E fit on the relationship between perceived stress and WFC at time 2 is shown in Figure 1. That is, the impact of perceived stress on WFC at time 2 was weaker (β = 0.36,

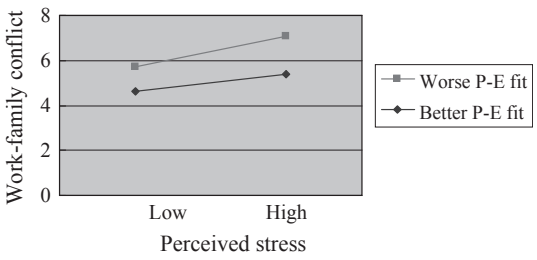

Figure 1
The moderating effect of P-E fit on the relationship between perceived stress and work–family conflict.

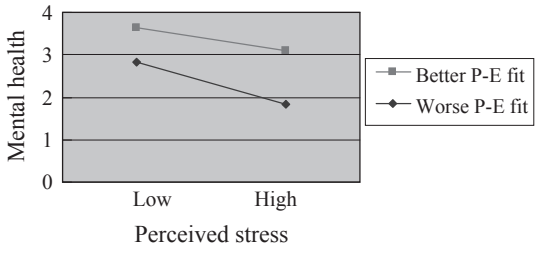

Figure 2
The moderating effect of P-E fit on the relationship between perceived stress and mental health.

$P < 0.05$) for employees who perceived a better P-E fit than those who perceived a worse P-E fit ($\beta = 0.54$, $P < 0.01$). The finding supports hypothesis 3.

The differential effect of high and low P-E fit on the relationship between perceived stress and mental health is shown in Figure 2. That is, the impact of perceived stress on mental health was weaker ($\beta = -0.41$, $P < 0.01$) for employees who perceived a better P-E fit than those who perceived a worse P-E fit ($\beta = -0.59$, $P < 0.01$). The finding supports hypothesis 4.

Discussion

The aims of this study were to test a research model that explains the causal relationships between perceived stress and both WFC and mental health, and further to determine whether person–environment (P-E) fit can moderate the relationships between perceived stress and both WFC and mental health.

Contrary to the findings of previous studies that found a significant positive correlation between perceived stress and WFC (Lourel *et al.* 2009, Michel *et al.* 2010) and a significant negative correlation between perceived stress and mental health (Elkins *et al.* 2010, Smith *et al.* 2010), the present longitudinal study found that perceived stress is an effective predictor of the degree of WFC and people's mental health status after controlling for job stress. This finding supports Lu's (1997) integrated job stress model, which found stress perception to be a significant mediating variable between potential stressors and people's responses to the stress they produce.

In addition, these results showed that the P-E fit can moderate effectively the relationships between perceived stress and both WFC and mental health. Compared with those with a worse P-E fit, a person with a better P-E fit exhibits not only a reduced positive relationship between perceived stress and WFC, but also a decreased negative relationship between perceived stress and mental health. In other words, when a person's proficiency can fulfill the demands of the job, or the individual shares similar values with their organisation, supervisors and team (a good P-E fit), this leads to lower perceived stress; consequently, they experience less WFC and better mental health.

The above research innovation contributes to the existing occupational health literature, this study also concludes that factors such as marital status, age, position, job-related stress and WFC at time 1 all influence WFC at time 2 or mental health among nurses and administrative staff. Compared with unmarried female workers, the family lives of married female workers are more significantly interfered with by work. Older employees had better mental health than younger ones. The WFC was a potential predictor of mental health. In addition, nurses experienced greater WFC than administrative staff, whereas subjects with higher job stress had greater WFC and worse mental health than those with less job stress. Many hospitals and healthcare institutions in Taiwan have been increasing their job demands on nurses and administrative staff in order to reduce personnel costs. This study's findings indicate that these increased demands create pressures that are likely to result in greater WFC and poorer mental health, especially for married female nurses. Hospitals therefore need to reverse such employment policies and to reduce their job demands in order to reduce the conflict between their employees' work and family roles and to counteract the developments of stress and mental health problems.

Limitations and future research directions

This research has a number of limitations. First, although this study proved that the person–environment (P-E) fit can effectively moderate the influence of perceived stress on WFC and mental health, female hospital workers with divergent jobs experience different stressors, and they may have varying levels of the anticipated P-E fit. We suggest that future research conducts a comparative analysis on staff across

departments with various job types. Hospital management could thus formulate the optimal human resource management practices according to the employees' jobs, and thereby effectively promote the P-E fit that is emphasized by staff across different departments.

Second, although this study's longitudinal design shows that perceived stress effectively predicts employees' WFC and mental health status, a follow-up measurement after two months is a short time-frame to monitor for any changes in an employee's mental health (such as development of burnout). Therefore, it is reasonable to suggest a longer data collection period for future studies.

Third, this study's theoretical arguments and longitudinal design support the likelihood that the relationships in the model are causal; however, this causality may be more firmly established in a follow-up study using the same instruments with an experimental design.

Finally, this study's data were collected in Taiwan, and this makes the cross-cultural generalizability of its findings problematic. Future research, testing the study's model with samples from Western societies, is necessary to provide direct evidence of the generalizability of our findings across cultures.

Conclusions

This study focused on the negative impacts of WFC and mental health problems on staff and organisations. Results indicated that hospitals should pay more attention to the negative effects that high amounts of perceived stress levels have on their female employees' WFC levels and mental health. Selecting strategies for reducing perceived stress has become a salient topic for hospital management, and the present findings provide evidence that the person–environment (P-E) fit buffered the impact of perceived stress on both WFC and mental health. Hence, both stress research and organisational programmes designed to mitigate employees' perceived stress should take this moderator into account.

Implications for nursing management

Person–environment (P-E) fit can effectively buffer the detrimental effects of perceived stress on both WFC and mental health. Thus, it is important to enhance or improve the level of employees' P-E fit. Hospitals can adopt various active human resource management practices to help nurses and administrative staff fit into the overall hospital environment (Sekiguchi 2006). In addition, hospitals can also improve those employees' perceptions of their fit with the current environment by reinforcing positive past experiences, such as reminding nurses and administrative staff of their perceptions during their interview process and their job fit, and by reinforcing positive future expectations, such as providing good prospects for promotion (Shipp & Jansen 2011). If hospitals can monitor and manage the P-E fit efficiently they can create and exploit opportunities to influence their staff by enabling perceived or expected misfits to change their perception as fitting in well, and thereby to moderate their perceived stress.

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Ethical approval

The design of the study was approved by the appropriate research ethics committee at our university.

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