Parental depression in the relationship between parental stress and child health among low-income families in Hong Kong

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ABSTRACT

Introduction: Low-income families face increased exposure to stressors, including material hardship and limited social support, which contribute to poor health outcomes. The poor health and behavioural problems in children from these families may exacerbate parental stress. This study explored the bidirectional relationship between parental stress and child health, along with its mediators and moderators, among low-income families in Hong Kong.

Methods: In total, 217 families were recruited from two less affluent communities between 2016 and 2017; they were followed up at 12 and 24 months. Each parent-child pair was assessed using parent-completed questionnaires on socio-demographics, medical history, parental stress, health-related quality of life, child health and behaviour, family harmony, parenting style, and neighbourhood cohesion.

Results: Thirty-eight parents (17.5%) reported significantly higher levels of stress than the control group. These individuals were more likely to be single parents (41.2% vs 18.5%), victims of intimate partner abuse (23.7% vs 10.9%), have a household income below 50% of the Hong Kong population median (50.0% vs 29.9%), and be diagnosed with mental illnesses (23.7% vs 5.1%). A bidirectional inverse relationship was observed between parental stress and child health at respective time points, with cross-effects from baseline child health to later parental stress, and from baseline parental stress to later child health. The relationship was mediated by the level of parental depression.

Conclusion: Parental stress both precedes and results from child health and behavioural problems, with reciprocal short-term and long-term effects. Screening and intervention for parental depression are needed to mitigate the impacts of stress on health among parents and children.

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New knowledge added by this study

- Single parents, victims of intimate partner abuse, individuals with mental illnesses, and/or those living in poverty reported significantly higher levels of stress compared to other low-income parents in Hong Kong.
- A bidirectional inverse relationship was observed between general parental stress and child health over a 24-month period among low-income families in Hong Kong.
- Parental depression mediated the relationship between parental stress and child health.

Implications for clinical practice or policy

- Active screening for parental depression among at-risk parents in low-income communities is urgently needed to enable early intervention and reduce long-term negative impacts on child health.

家長抑鬱症在香港低收入家庭中於家長壓力與兒童健康關係中的作用

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引言：低收入家庭面臨越來越多壓力，包括物質匱乏和社會支持不足，這些壓力會導致健康狀況不佳。這些家庭的兒童若有健康不良或行為問題，可能進一步增加家長壓力。本研究探討香港低收入家庭中家長壓力與兒童健康之間的雙向關係，以及相關的中介變數和調節變數。

方法：本研究於2016年至2017年間，從兩個經濟較弱的社區中招募了217個家庭，並在12個月和24個月進行追蹤。每對親子組合均由家長填寫問卷進行評估，內容涵蓋社會人口統計資料、病史、家長壓力、健康相關生活品質、兒童健康和行為、家庭和諧、教養方式以及鄰里凝聚力。

結果：共有38位家長（17.5%）報告其壓力水平顯著高於對照組。這些家長更可能是單親（41.2%對18.5%）、曾遭受伴侶暴力（23.7%對10.9%）、家庭收入低於香港人口中位數的50%（50.0%對29.9%）以及被診斷患有精神疾病（23.7%對5.1%）。在各個時間點，家長壓力與兒童健康之間存在雙向負向關係，當中包括基線兒童健康狀況對後期家長壓力的交叉影響，以及基線家長壓力對後期兒童健康的交叉影響。此關係由家長的抑鬱程度為中介。

結論：家長壓力既是兒童健康和行為問題的前因，也是結果，兩者存在短期和長期的雙向影響。應進行家長抑鬱症的篩查和干預，以減輕壓力對家長和兒童健康所帶來的影響。

Introduction

Low-income families face increased exposure to stressors,[1,2] such as material hardship, dispossession, limited social support,[3,4] trauma, and violence,[1,5] which subsequently affect family relationships and the physical and mental health of parents,[6-8] contributing to household-wide feelings of stigma, isolation, and exclusion. These stressors are particularly relevant to Hong Kong, where approximately one-fifth of the population lives below the poverty line.[9] Adults from low-income families in Hong Kong have reported significantly lower health-related quality of life (HRQOL) than age- and sex-matched individuals from the general population; low income is significantly associated with poorer mental health.[10]

Stressors may persist across the life course and affect the next generation, resulting in intergenerational socio-economic inequality and health disparities. Early caregiving experiences have been linked to later-life child health outcomes through physiological stress responses.[11] Moreover, poor mental health in parents may lead to family disharmony and maladaptive parenting practices, which can increase a child's risk of adverse health outcomes.[7,8] Specifically, children of parents with depression tend to exhibit more difficult temperaments and diminished psychosocial functioning.[12,13] Children from low-income families in Hong Kong have reported poorer health and more behavioural problems relative to population norms for similar age-groups.[14,15] Without adequate parental care and guidance, such children may be more vulnerable to academic difficulties and behavioural problems, thereby exacerbating parental stress. A bidirectional relationship between parental stress and child health has been documented in Western studies[6,8] but not within the Chinese context.

Stress coping can be mediated or moderated by various social factors.[16,17] For instance, stressed parents may contribute to family disharmony, which mediates diminished child health. Neighbourhood cohesion may moderate this relationship by alleviating parental stress and enhancing children's well-being. The identification of mediators and moderators that may influence the relationship between parental stress and child health enables development of targeted interventions and policy recommendations. Despite strong associations of parental depression with stress[18] and child health,[12,13] its mediating role in this relationship remains unclear. A recent study demonstrated mediation between parental stress and parent-infant bonding,[19] but evidence concerning overall child health is lacking. This study aimed to explore whether a bidirectional relationship exists between parental stress and child health and to identify its mediators and moderators, with the goal of promoting health among parents and children from low-income families in Hong Kong. We hypothesised that parental stress precedes and results from child health, with mediating and moderating effects exerted by factors illustrated in Figure 1.

Methods

Study design

This prospective cohort study involved 217 parent-child pairs in which at least one parent was the primary caregiver and at least one parent was employed, with a monthly household income lower than 75% of the Hong Kong median at baseline. This income criterion included working poor families who lived above the poverty line (50% of the population median) and received limited government support. Families were recruited by research staff when attending health assessments during our previous cohort study[20] performed in two less affluent Hong Kong communities between May 2016 and October 2017. Parents unable to communicate in Chinese, as well as children born prematurely and/or with congenital deformities, were excluded. All parents provided written informed consent for themselves and their child to participate in the study. Sample

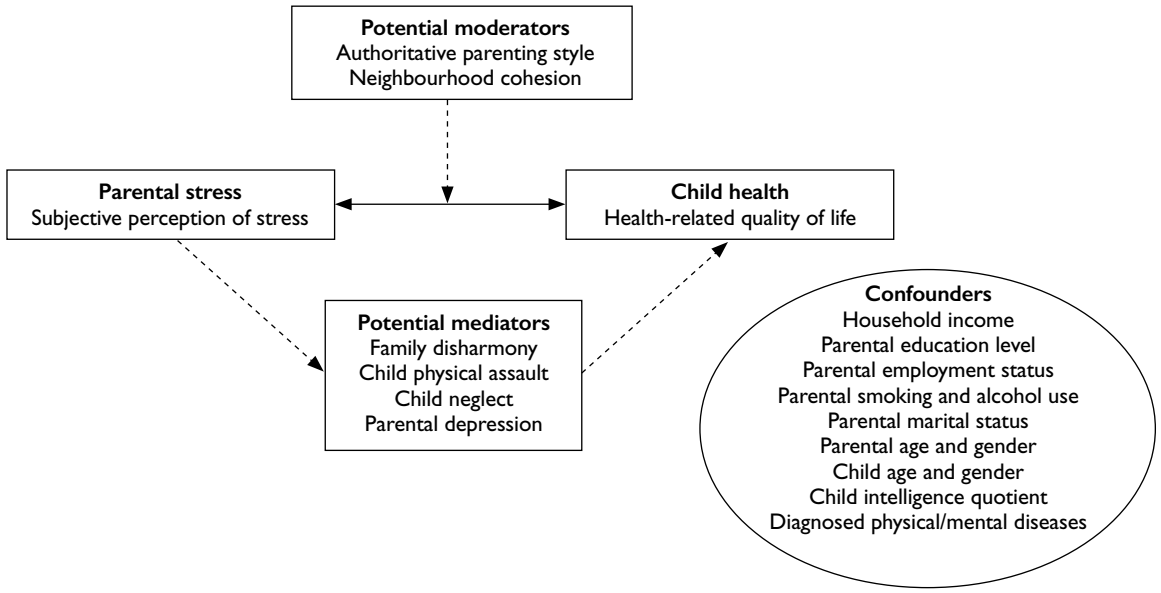

FIG 1. Study concept map based on existing knowledge of the associations of parental, child and family factors with parental stress and child health

size was determined based on the need to detect a difference in Child Health Questionnaire (CHQ) scores between children of parents with high and low stress levels, classified according to the Depression Anxiety Stress Scales (DASS) stress subscale scores. Our previous cohort study showed that average CHQ general health perceptions subscale scores in children of parents with high and low DASS stress subscale scores were 59 (standard deviation [SD]=17) and 65 (SD=16), respectively[20] (effect size=0.4). A sample size of 200 (100 per group) parent-child pairs was required to detect a difference of 6 points in CHQ general health perceptions subscale score between groups using an independent *t* test with 80% power and a 5% level of significance.

Data collection

Each parent-child pair was invited to complete a comprehensive questionnaire survey at three time points (ie, baseline, 12 months, and 24 months) covering parental stress, HRQOL, and mental health; child's general health, HRQOL, and behaviour; family harmony; parenting style; and neighbourhood cohesion, as reported by the parent. Potential confounders were recorded at baseline, including parental age, gender, education level, marital status, employment status, household income, smoking habits, and alcohol consumption, as well as the child's age, gender, estimated intelligence quotient, and special education needs. Physical and mental co-morbidities in parents and children were recorded at all three time points.

Study instruments

Exposure

Parental stress was measured using the stress subscale of the DASS–21 items questionnaire.[21] A cut-off score of ≥15 indicated the presence of significant parental stress.[21] The scale has been validated in a Chinese population.[22]

Primary outcome

Child health was measured using the general health perceptions subscale score from the CHQ–Parent Form 50.[23] A higher score indicates better perceived physical and psychological HRQOL in the child based on parental proxy report. The Chinese version has demonstrated good psychometric properties in local Chinese children.[20]

Potential mediators/moderators

The Patient Health Questionnaire–9 (PHQ-9)[24] was used to screen for parental depression. A cut-off score of ≥10 was regarded as clinically significant depression. The Chinese version of the PHQ-9 was validated and used in our previous study.[20] Family harmony was measured using the Family Harmony Scale–Short Form (FHS-5).[25] Higher single-factor harmony scores reflect greater harmony. The Chinese version has demonstrated good psychometric properties in local Chinese households.[25] Parent-child interaction was assessed using the Child Physical Assault and Neglect subscales of the Parent–Child Conflict Tactics Scale (CTSPC).[26] Higher

scores indicate higher frequencies of respective issues in the past 12 months. The translated traditional Chinese version has demonstrated good psychometric properties.[27] Parenting style was assessed using the Authoritative Parenting Style subscale of the short version of the Parenting Style and Dimensions Questionnaire.[28] A higher score indicates a stronger tendency towards authoritative parenting. The questionnaire has been validated in the Chinese cultural setting.[29] Neighbourhood support was measured using the Neighbourhood Collective Efficacy Scale.[30] Higher scores indicate greater neighbourhood cohesion. The scale has been tested in Chinese in a local study.[31]

Data analysis

Baseline characteristics of parent-child pairs and their households were summarised using descriptive statistics. Differences between groups according to parental stress level were assessed using independent *t* tests for continuous variables and the Chi squared test for categorical variables.

The longitudinal bidirectional relationship between parental stress and child health was assessed using a cross-lagged panel model. Multiple indicators were utilised to evaluate model goodness-of-fit. A statistically non-significant Chi squared P value, Comparative Fit Index and Tucker-Lewis Index >0.95, root mean square error of approximation ≤0.05, and standardised root mean residual >0.08 were considered indicative of desirable goodness-of-fit. The final model was selected using root mean square error of approximation–based forward stepwise selection.

A mediation model was used to evaluate candidate mediators. Model estimates were obtained using 5000 bootstrapping samples. A statistically significant indirect effect, along with a reduced direct effect magnitude relative to the total effect, indicated that a given mediator explained the relationship between parental stress and child health.[32] A multi-mediator model was constructed; differences in indirect effects between mediators were estimated via pairwise comparison.

Potential moderating effects of neighbourhood cohesion and parenting style on the relationship between parental stress and child health were examined by multivariable linear regression. A statistically significant interaction term coefficient indicated a moderation effect. All variables were centred to a mean of zero to reduce multicollinearity related to interaction terms. Confounders were included to improve model goodness-of-fit; R^2 and adjusted R^2 values were used to evaluate model performance.

All descriptive analyses were performed using Stata 16 (StataCorp LLC, College Station [TX], US); all model analyses were carried out using the lavaan package[33] version 0.6-6, in R version 4.0.1 (R Foundation for Statistical Computing, Vienna, Austria). Data completion rates are presented in online supplementary Table 1. Complete case analyses were conducted. All tests were two-tailed; P values <0.05 were considered statistically significant.

Results

Among the 217 parent-child pairs recruited at baseline, 175 (80.6%) and 184 (87.6%) pairs attended the 12-month and 24-month follow-ups, respectively (online supplementary Fig 1). Their characteristics at each of the three time points are detailed in Table 1.

Baseline characteristics of parent-child pairs

At baseline, the ages of parents and children (mean ± SD) were 42.4 ± 6.2 years and 10.7 ± 2.0 years, respectively. Approximately half of the children were girls (47.5%), whereas the parents involved were predominantly mothers (91.7%). The majority (75.2%) of parents had completed secondary education. Approximately 39.8% of primary parents were employed, and 57.2% of families had a monthly household income below 75% of the 2016 Hong Kong median (ie, HK$25 000).[34]

Thirty-eight parents (17.5%) experienced significant stress, indicated by a DASS stress subscale score of 15 or above at baseline. Considerable differences were evident in their baseline characteristics compared with parents who were not stressed. Stressed parents were more likely to be single parents (41.2% vs 18.5%) and to have a household income below 50% of the Hong Kong median (50.0% vs 29.9%). A greater proportion of stressed parents reported being victims of intimate partner abuse (23.7% vs 10.9%). Diagnosed mental illnesses (23.7% vs 5.1%) and depression, indicated by a PHQ-9 score ≥10 (21.1% vs 2.4%), were more prevalent among these parents (Table 2). Both their physical and mental HRQOL were significantly worse (physical component score=42.5 ± 9.9 vs 49.1 ± 8.2; mental component score=38.1 ± 10.0 vs 55.5 ± 8.7; P<0.001).

Compared with children of parents who were not stressed, children of stressed parents were younger (age=10.0 ± 2.6 years vs 10.8 ± 1.8 years; P=0.020) and had worse general health and HRQOL, as reflected by lower scores in every subscale of the CHQ–Parent Form 50 except bodily pain and self-esteem. In particular, large differences were observed in four subscales: parental impact—emotional, parental impact—time, family activities, and family cohesion.

Moreover, stressed parents reported lower scores in family harmony (FHS-5) and neighbourhood cohesion (Neighbourhood Collective Efficacy Scale). Although parenting style did not differ significantly,

TABLE 1. Socio-demographics, co-morbidities, and outcome measures*

	Children			Parents		
	Baseline (n=217)	**12 months (n=175)**	**24 months (n=184)**	**Baseline (n=217)**	**12 months (n=175)**	**24 months (n=184)**
Socio-demographics						
Age, y	10.7 ± 2.0	N/A	N/A	42.4 ± 6.2	N/A	N/A
Gender						
Female		103 (47.5%)			199 (91.7%)	
Household income, % of Hong Kong median† (n=208)						
<50%			69 (33.2%)			
50%-74%			50 (24.0%)			
≥75%			89 (42.8%)			
Education level (n=206)						
No education/primary school				33 (16.0%)	N/A	N/A
Secondary school				155 (75.2%)	N/A	N/A
Tertiary or above				18 (8.7%)	N/A	N/A
Currently employed (n=196)				78 (39.8%)	N/A	N/A
Single-parent family (n=202)				45 (22.3%)	N/A	N/A
Intimate partner abuse (n=212)				28 (13.2%)	N/A	N/A
Current smoker (n=213)				36 (16.9%)	N/A	N/A
Alcohol use (n=213)				37 (17.4%)	N/A	N/A
Co-morbidities						
Any physical disease	33/216 (15.3%)	9/134 (6.7%)	26/133 (19.5%)	75/215 (34.9%)	46/151 (30.5%)	53/144 (36.8%)
Any mental disease	1/200 (0.5%)	0	0	18/214 (8.4%)	10/152 (6.6%)	18/144 (12.5%)
PHQ-9 (full score=27)						
Score				3.0 ± 3.7	N/A	2.9 ± 4.0
Depression (score ≥10)				12/203 (5.9%)	N/A	13/171 (7.6%)
Special education needs	8/216 (3.7%)	N/A	N/A			
Estimated intelligence quotient		100.2 ± 13.6				
Core measures						
DASS stress subscale score (full score=42)				7.3 ± 8.2	7.6 ± 9.0	7.2 ± 8.2
CHQ-PF50 general health perceptions subscale (full score=100)	67.7 ± 17.7	68.4 ± 16.9	67.2 ± 19.1			
Family and neighbourhood environment						
FHS-5 score (full score=25)				19.4 ± 3.5	N/A	19.3 ± 3.6
PSDQ score (full score=75)				51.7 ± 10.1	N/A	52.5 ± 11.7
NCES score (full score=50)				32.6 ± 7.7	N/A	32.1 ± 6.6
CTSPC						
Physical assault subscale score (full score=54)				4.0 ± 5.9	N/A	2.7 ± 5.2
Neglect subscale score (full score=30)				2.3 ± 3.5	N/A	2.7 ± 3.4

Abbreviations: CHQ-PF50 = Child Health Questionnaire–Parent Form 50; CTSPC = Conflict Tactics Scale for Parent and Child; DASS = Depression Anxiety Stress Scales; FHS-5 = Family Harmony Scale–Short Form; N/A = not applicable; NCES = Neighbourhood Collective Efficacy Scale; PHQ-9 = Patient Health Questionnaire–9; PSDQ = Parenting Styles and Dimensions Questionnaire

* Data are shown as No. (%) or mean ± standard deviation

† Hong Kong household median income=HK$25 000 in 2016. See reference 34

TABLE 2. Baseline characteristics stratified by parental stress group (n=217)*

	Stressed (n=38)	Not stressed (n=179)	P value
Household factors			
Household income, % of Hong Kong median†			0.041
<50%	17/34 (50.0%)	52/174 (29.9%)	
50%-74%	8/34 (23.5%)	42/174 (24.1%)	
≥75%	9/34 (26.5%)	80/174 (46.0%)	
Single-parent family	14/34 (41.2%)	31/168 (18.5%)	0.004
Intimate partner abuse	9 (23.7%)	19/174 (10.9%)	0.034
Family and neighbourhood environment			
FHS-5 score	17.2 ± 4.9	19.9 ± 2.9	<0.001
PSDQ score	49.0 ± 12.1	52.3 ± 9.5	0.065
NCES score	29.5 ± 7.7	33.3 ± 7.6	0.007
CTSPC			
Physical assault subscale score	7.5 ± 8.9	3.3 ± 4.7	<0.001
Neglect subscale score	3.6 ± 5.3	2.0 ± 2.9	0.011
Parent factors			
Age, y	42.8 ± 6.9	42.3 ± 6.1	0.619
Gender			0.231
Female	33 (86.8%)	166 (92.7%)	
Education level			0.071
No education/primary school	8/34 (23.5%)	25/172 (14.5%)	
Secondary school	20/34 (58.8%)	135/172 (78.5%)	
Tertiary or above	6/34 (17.6%)	12/171 (7.0%)	
Currently employed	12/33 (36.4%)	66/163 (40.5%)	0.659
Current smoker	8 (21.1%)	28/175 (16.0%)	0.451
Alcohol use	10 (26.3%)	27/175 (15.4%)	0.108
Any physical disease	17 (44.7%)	58/177 (32.8%)	0.160
Any mental disease	9 (23.7%)	9/176 (5.1%)	<0.001
PHQ-9			
Score	5.8 ± 5.4	2.4 ± 2.9	<0.001
Depression (score ≥10)	8 (21.1%)	4/167 (2.4%)	<0.001
Index child factors			
Age, y	10.0 ± 2.6	10.8 ± 1.8	0.020
Gender			0.466
Female	16 (42.1%)	87 (48.6%)	
Any physical disease	6 (15.8%)	27 (15.1%)	0.923
Any mental disease	1 (2.6%)	0	0.030
Estimated intelligence quotient	100.2 ± 12.4	100.2 ± 13.9	0.982
Special education needs	2 (5.3%)	6/176 (3.4%)	0.575
CHQ-PF50 general health perceptions subscale (full score=100)	58.4 ± 16.9	69.6 ± 17.2	<0.001

Abbreviations: CHQ-PF50 = Child Health Questionnaire–Parent Form 50; CTSPC = Conflict Tactics Scale for Parent and Child; FHS-5 = Family Harmony Scale–Short Form; NCES = Neighbourhood Collective Efficacy Scale; PHQ-9 = Patient Health Questionnaire–9; PSDQ = Parenting Styles and Dimensions Questionnaire

* Data are shown as No. (%) or mean ± standard deviation, unless otherwise specified

† Hong Kong household median income=HK$25 000 in 2016. See reference 34

stressed parents showed a greater tendency for physical punishment, as reflected by higher scores on the CTSPC–physical assault subscale, and for neglect, as indicated by higher CTSPC–neglect subscale scores, compared with parents who were not stressed (Table 2).

Relationship between parental stress and child health over time

Figure 2 shows the cross-lagged panel model examining the bidirectional relationship between parental stress and child health. A bidirectional relationship between child health and parental stress was confirmed. Significant associations were observed between parental stress and child health at each time point (estimates: baseline=-0.22, 12 months=-0.21, 24 months=-0.47); between baseline child health and parental stress at 12 months (estimate=-0.40) and 24 months (estimate=-0.42); and between baseline parental stress and child health at 12 months (estimate=-0.57) and 24 months (estimate=-0.10).

Mediators and moderators of the parent-child health relationship over time

The multi-mediation model results generated by bootstrapping are illustrated in Figure 3; the model estimates and goodness-of-fit statistics are presented in online supplementary Table 2. The total effect of the relationship between parental stress and child health was reduced when mediators were included in the model. Significant positive associations of parental stress were observed with the PHQ-9 score, as well as the physical assault and neglect subscales of the CTSPC. A significant negative association was noted between parental stress and the FHS-5 score. Among mediators, only the PHQ-9 exerted a significant negative effect on child health.

Table 3 presents the moderation model. Neither neighbourhood cohesion nor parenting style demonstrated a moderating effect on the relationship between parental stress and child health. Estimates for the interaction terms were negligible. The R^2 values were around 0.21, and the adjusted R^2 values were slightly lower (0.11-0.13), indicating modest explanatory power of the model after adjusting for confounders.

Discussion

Our study demonstrated that a substantial proportion of low-income parents experienced stress (17.5%), which was associated with multiple stressors including poverty, marital problems, intimate partner abuse, family disharmony, and reduced neighbourhood support. Children of stressed parents reported worse general health and HRQOL, as well as more behavioural problems.

A short-term and long-term bidirectional inverse relationship between parental stress and child health was confirmed; this relationship was partially mediated by the level of parental depression.

Compared with the general Hong Kong population, the parent-child pairs in this study were more exposed to various known stressors in addition to low income. The prevalences of single-parent families (22.3% vs 9.8%[35]) and intimate partner abuse (13.2% vs 7.2%[36]) were higher, and more parents reported regular alcohol consumption (17.4% vs 8.7%[37]). Therefore, it is not surprising that a considerably greater proportion of parents in this study experienced elevated levels of stress (17.5% vs 5.2%[38]) and depression (5.9% vs 1.2%[37]). The persistently high level of parental stress observed during the study period may be attributed partly to ongoing exposure to various stressors over time and partly to constant exposure to chronic stressors. Both scenarios highlight the urgent need to ensure assessment and intervention for these disadvantaged parents.

Previous studies have demonstrated bidirectional interactions between parental stress and child health in relation to both internalising and externalising behaviours.[6,8] Increases in behavioural problems have been shown to raise parental stress over time, which in turn exacerbates behavioural issues in children.[39] Our study adds to this body of evidence by confirming significant bidirectional effects between general parental stress and child health at each time point. Cross-effects were observed from baseline child health to later parental stress, and from baseline parental stress to later child health at both 12 and 24 months. These findings suggest that parental stress both precedes and results from child health, with reciprocal short-term and long-term influences.[40]

In our attempt to identify pathways through which parental stress affects child health, we observed that only parental depression significantly mediated the relationship. This result is consistent with previous findings that maternal depression and perceived stress directly and negatively influence child development.[41] One possible explanation is that depressed mothers may lack the energy or capacity to provide adequate care and support for their child's health. Research into this mediation effect remains limited; however, one recent study reported similar outcomes regarding the indirect impact of work-related stress on child health, mediated by maternal depression.[42] The implementation of screening and intervention for parental depression is both imperative and urgent to counteract the adverse effects of stress on parental and child health. Medical and social service providers should collaborate to actively screen at-risk parents from low-income families in the community. Early intervention through lifestyle-based care—such as physical activity, relaxation techniques, and mindfulness-based therapies—can help to prevent[43,44] and manage[45,46] depression, thus mitigating long-term negative impacts on child health.

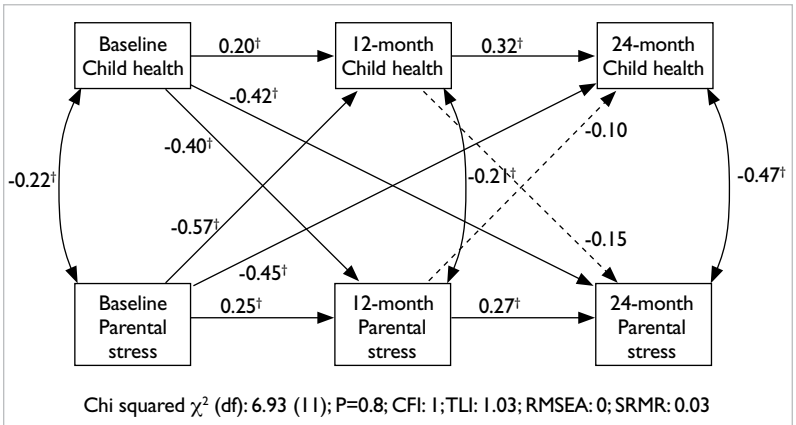

FIG 2. Cross-lagged panel model between parental stress and child health*

Abbreviations: CFI = Comparative Fit Index; df = degrees of freedom; RMSEA = root mean square error of approximation; SRMR = standardised root mean square residual; TLI = Tucker-Lewis Index

* The model was adjusted for the child's estimated intelligence quotient and parent gender. Confounders were selected via forward stepwise selection based on the smallest RMSEA. Solid lines represent significant relationships; dotted lines represent non-significant relationships

† P<0.05

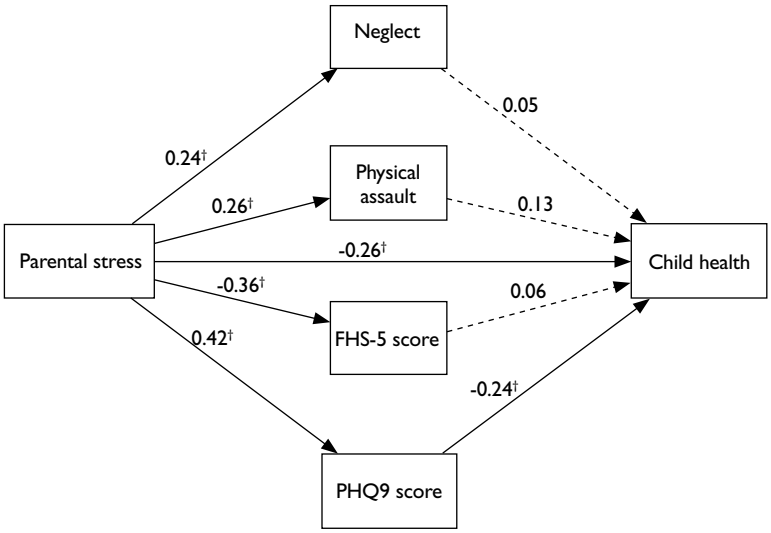

FIG 3. Multi-mediation model between parental stress and child health*

Abbreviations: FHS-5 = Family Harmony Scale–Short Form; PHQ9 = Patient Health Questionnaire–9

* The model was adjusted for parent age and gender, child age and gender, household income, parental employment, marital status, smoking and alcohol use, presence of diagnosed mental and physical diseases in parent or child, and child's estimated intelligence quotient. Solid lines represent significant relationships; dotted lines represent non-significant relationships

† P<0.05

TABLE 3. Moderation effects of the relationship between parental stress and child health*

Moderator	Stress estimate	P value	Moderator estimate	P value	Interaction term estimate	P value	R^2	Adjusted R^2
NCES	-0.63	<0.001	-0.18	0.335	-0.01	0.775	0.21	0.11
PSDQ	-0.51	0.009	0.08	0.605	0.02	0.262	0.21	0.13

Abbreviations: NCES = Neighbourhood Collective Efficacy Scale; PSDQ = Parenting Styles and Dimensions Questionnaire

* Results were adjusted for parent age and gender, child age and gender, household income, parental employment status, marital status, smoking and alcohol use, presence of diagnosed mental and physical diseases in parent or child, and child's estimated intelligence quotient

However, it must be noted that parents with depression may be biased towards over-reporting their child's problems,[47] compared with other informants such as teachers and the children themselves.[48] Further research is warranted to identify individual and family characteristics that may influence discrepancies between informants. Other potential factors examined in previous studies—such as household structure (dual- vs multi-generational), parental rearing behaviours, and confident and affective social support—might also contribute to the relationship between parental stress and child health; they should be explored in future studies with larger sample sizes.

Strengths and limitations

This is one of the first studies to examine the longitudinal relationship between general parental stress and child health, enabling assessment of possible causal relationships between the two outcomes. Specifically, we recruited vulnerable families with substantial socio-economic disadvantages who experience high levels of stress and would benefit most from future interventions. Furthermore, a high response rate was maintained throughout the study, ensuring adequate power for the analyses.

However, the findings of our study must be interpreted in light of the following limitations. First, although we conducted a comprehensive analysis of factors related to parental stress and child health, the outcomes were based on self-reported assessments, which are susceptible to respondent bias. Only three measurements, taken 1 year apart, were performed in this study due to concerns regarding practicality and the burden on participating families. Therefore, caution should be exercised in generalising the results with respect to longitudinal trends, given that substantial intra-individual fluctuations may have occurred but were not captured in this study. Second, both parental stress and child health were assessed using parent-report questionnaires, which may contribute to increased shared method variance. Additionally, aspects of the child's health or behaviour considered problematic by the parent may not align with assessments made by other individuals (eg, teachers). As mentioned earlier, parents with depression may be biased towards over-reporting problems and are more likely to report behavioural issues in their child compared with other informants.[47,48] The validity of parent-perceived measures of child health—particularly in relation to parental depression—and their agreement with other caregivers should be examined in future trials specifically designed for this purpose. Third, there were unmeasured confounders in this observational study, such as exercise and social functioning. Moreover, certain socio-demographic factors, including marital and employment statuses, were assumed to be static throughout the study. It remains uncertain whether changes in these factors, if any, may have influenced the observed results. Additional information regarding participant characteristics, observational measures of child behaviour, or objective indicators of child health (eg, cortisol levels) could improve the reliability of the findings.

Conclusion

This study showed that a substantial proportion of parents from low-income families in Hong Kong experienced general stress due to multiple stressors, which was negatively associated with their child's health. A bidirectional relationship was observed between parental stress and child health over time, which may be partly mediated by parental depression. Prompt screening and appropriate intervention are necessary to prevent adverse health outcomes for parents and children in low-income families.

Author contributions

Concept or design: EYT Yu, RSM Wong, AFY Tiwari, CKH Wong, VY Guo, CLK Lam.
Acquisition of data: RSM Wong, KSN Liu.
Analysis or interpretation of data: EYT Yu, EYF Wan, RSM Wong, IL Mak, AFY Tiwari, CKH Wong, VY Guo, CLK Lam.
Drafting of the manuscript: EYT Yu, RSM Wong, IL Mak, CHN Yeung.
Critical revision of the manuscript for important intellectual content: All authors.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

As advisors of the journal, EYT Yu and CKH Wong were not involved in the peer review process. Other authors have disclosed no conflicts of interest.

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Declaration

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Ethics approval

This research was approved by the Institutional Review Board of The University of Hong Kong/Hospital Authority Hong Kong West Cluster, Hong Kong (Ref No.: UW 16-415). Informed consent was obtained from patients when baseline data were collected.

Supplementary material

The supplementary material was provided by the authors and some information may not have been peer reviewed. Accepted supplementary material will be published as submitted by the authors, without any editing or formatting. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by the Hong Kong Academy of Medicine and the Hong Kong Medical Association. The Hong Kong Academy of Medicine and the Hong Kong Medical Association disclaim all liability and responsibility arising from any reliance placed on the content. To view the file, please visit the journal online (https://doi.org/10.12809/hkmj2412040).

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