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Severe physical violence between intimate partners during pregnancy: a risk factor for early cessation of exclusive breast-feeding

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Abstract

Objective: To investigate the role of severe physical violence during pregnancy (SPVP) between intimate partners in early cessation of exclusive breast-feeding (EBF).

Design: A health services survey. The revised Conflict Tactics Scale was used to characterize SPVP; premature breast-feeding cessation was identified using a current status data approach, which was based on the information reported from food recall during the preceding 7 d. The cumulative hazard function was estimated by complementary log–log transformation models, which allowed the ensuing estimation of early breast-feeding cessation rates in different age groups and the ratio of rates of weaning between women exposed and not exposed to violence.

Setting: Five large public primary health-care facilities of Rio de Janeiro, Brazil.

Subjects: The sample comprised 811 randomly selected mothers of children under 5 months of age who were waiting to be consulted.

Results: SPVP is an independent risk factor of cessation of EBF since, after controlling for socio-economic, demographic, reproductive and lifestyle variables, women exposed to violence presented an incidence density that was 31 % higher than those who were not exposed (hazard ratio = 1·30, 95 % CI 1·01, 1·69).

Conclusions: The findings corroborate the hypothesis that SPVP is an important risk factor for EBF. This indicates the need for incentives to adequately train health-care personnel in dealing with lactating women in order to gain a broader view of breast-feeding beyond the biological aspects of lactation, including the maternal psychological dimension.

Keywords
Breast-feeding
Domestic violence
Risk factor

Currently, there exists well-established scientific evidence supporting the practice of exclusive breast-feeding (EBF)[1,2]. WHO recommends EBF up to 6 months and thereafter its complementation with safe foods until the child reaches ≥2 years of age[1,3]. Despite the benefits afforded by EBF, the global rates of breast-feeding still fall short of acceptable levels[4]. According to WHO, only 35 % of children under 4 months of age are exclusively breast-fed[1].

The practice of breast-feeding is a result of biological, innate and behavioural impulses and moderated through certain attributes of the mother and the newborn, as well as through the context in which they live. Among maternal factors, the repercussions of intimate partner violence (IPV) on the onset and duration of EBF have been increasingly debated in the literature[5,6].

Several hypotheses justify adding IPV to this debate. According to the Pan-American Health Organization, women who suffer from IPV during pregnancy may have reduced self-esteem and thus a reduced ability to care for the newborn and adopt health-promoting measures such as sustaining EBF[7]. Experiencing situations of intimate violence before, during and after pregnancy may also interfere directly in the production of milk by changing the pattern of adrenaline and noradrenaline release acting on the hypothalamo-hypophyseal axis, which is largely responsible for milk production and the let-down reflex[8]. The impact of IPV on the self-esteem and self-confidence of a pregnant woman may also hamper her capacity to perceive herself as the child's exclusive source of food[9].

Published studies on the repercussions of IPV on the initiation, duration and management of breast-feeding are

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still scarce. In a recent MEDLINE literature review, only five studies were identified with this focus and the results were rather conflicting. Acheson[10] and Lourenço and Deslandes[11] showed that IPV reduced the time of maternal breast-feeding, whereas Bullock *et al.*[12], Silverman *et al.*[13] and Lau and Chan[14] found no link. Although some evidence on an IPV–EBF relationship does exist, available studies fall short of providing a comprehensive account. An issue that requires investigation is with regard to the role that severe physical violence during pregnancy (SPVP) may play on EBF. In order to address this gap, the present study aims to investigate whether SPVP is an independent risk factor for early termination of EBF.

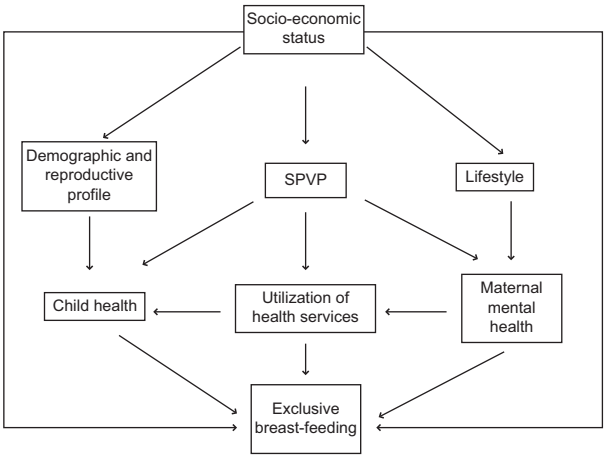

Fig. 1 Theoretical–conceptual model (SPVP, severe physical violence during pregnancy)

Methods

Setting and participants

The sample comprised randomly selected mothers of children under 5 months of age waiting to be consulted in five large public primary health-care (PHC) facilities of Rio de Janeiro, Brazil. Data collection took place from January to July 2007. A woman was considered ineligible if she did not experience at least one month of an intimate relationship with a partner during pregnancy or postpartum; gave birth to twins; or if there was an absolute counter-indication for breast-feeding. Out of the 853 women invited for the study, eighteen (2·1 %) were not eligible; among the remaining 835, twenty-four (2·9 %) refused to participate. Thus, 811 women were effectively interviewed in a reserved area without the presence of anyone but the interviewer, once anonymity and confidentiality of information had been guaranteed.

Conceptual model, variables and measurements

Figure 1 shows the theoretical–conceptual model of the study, which covers the dimensions most often studied in IPV during pregnancy and early weaning. The first hierarchical dimension relates to the socio-economic situation, here represented by women's educational status measured through 'schooling achievement', 'work status during postpartum' and the overall 'economic situation of the family'. The latter variable uses the Brazilian Criterion of Economic Classification (BCEC), which encompasses information on the level of education of the household's main breadwinner, the possession of selected appliances and durable assets, and the presence or absence of a domestic employee at home[15]. This variable involves five decreasing economic strata/levels (A–E).

The intermediate level of the model encompasses the main variable of interest – 'SPVP' – as well as variables on women's lifestyles and demographic and reproductive characteristics. SPVP was assessed through the revised Conflict Tactics Scale (CTS2), which has been formally adapted for use in Brazil[16–20]. A case was considered positive when the women reported having experienced at least one of the acts comprising the severe physical assault subscale during pregnancy, either as a victim or as a perpetrator.

The demographic and reproductive dimensions comprised 'age' (mothers and children), 'sex' (child), 'number of children in the household' (per mother) and the 'mother's desire to get pregnant'. The lifestyle dimension was represented by the current tobacco smoking habits (yes/no) and alcohol and illicit drug use during gestation. Alcohol (mis)use among pregnant women was evaluated through TWEAK (Tolerance; Worry; Eye-opened, Amnesia; C/Kut-down), a screening tool previously adapted for use in Brazil[21,22]. A Brazilian version of the NSDUQ (Non-Student Drug Use Questionnaire) was used to identify illicit drug use. The consumption of at least one illicit substance (marijuana, cocaine or solvents) defined a positive case[23].

Three dimensions were postulated at the proximal level and envisaged as possible mediators of the effect of SPVP on breast-feeding: child health, utilization of health services and maternal mental health. The first dimension was represented by the 'mother's perception regarding the child's health status' and 'gestational age' at birth. The use of health services was characterized by the 'gestational age when the mother started her prenatal follow-up', 'number of prenatal health-care visits' and 'quality of maternity care', the latter typified by whether the hospital in which the child was born adhered to a state-sponsored pro-breast-feeding programme (Baby-Friendly Hospital Initiative (BFHI))[24]. Depicting the third mediating dimension, 'maternal self-esteem' was assessed through a Portuguese version of the Rosenberg scale[25,26].

A child was considered to be in EBF regime when receiving only breast milk, either directly from the breast or mechanically extracted, and no other liquid or solid except for supplementary vitamins and minerals, oral rehydration solution and/or medicines[27]. Since most of the mothers went to a health centre to give birth to the

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child seen in the paediatric sector, the assessment of EBF was based on maternal recall of infant feeding during the preceding 7 d. This strategy attempted to recover the child's established feeding routine outside the period of acute illness or convalescence. Infants are more inclined to accept only breast milk on such occasions, which increases the likelihood of false-positive information on the EBF regime. Categorizations (levels) of the other variables used in the analysis are self-evident and are displayed in Table 1 (see Results section).

Statistical analysis

The data analysis was based on the 'current status approach'[28,29]. Among several suggested models, preference was given to the complementary log–log model[28]. This model estimates the cumulative hazard function equivalent to that estimated by the Weibull survival model[30].

The theoretical model presented in Fig. 1 guided the statistical modelling process. First, an analysis was carried out to scrutinize the variables unconditionally associated with outcome. A P value ≤0·20 was considered as the cut-off point. A multivariate analysis followed, on the basis of two models. The first (Model I) assumed that the dimensions related to the child's health, use of health services and maternal mental health were mediators in the causal pathway between exposure (SPVP) and outcome (early cessation of EBF) and were thus excluded. To test this hypothesis, Model II included all three dimensions. One may assume that this hypothesis is corroborated if the effect of SPVP on early cessation of EBF declines or even disappears with the introduction of the three dimensions. Variables that modified the SPVP coefficient by at least 10 % and/or those that presented a P value ≤0·05 were retained in the models.

Ethical considerations

The present study was approved by the Research Ethics Committee of the Rio de Janeiro Municipal Health Department in conformity with the Declaration of Helsinki. All participants gave their written informed consent after anonymity and confidentiality of information had been guaranteed. The women also received advice about public facilities that help families affected by violence in Rio de Janeiro. Further contacts were encouraged if perceived to be necessary.

Results

According to Table 1, the prevalence of severe physical abuse among partners was 18·9 %. Over half of the children (53·9 %) were no longer exclusively breast-fed at the time of the interview. The median time spent in EBF was 30 d. Most of the children were aged <90 d (73·6 %), the average being 59 (SD 41·7) d. The initial univariate exploratory analysis indicated that most of the variables, such as maternal sociodemographic, lifestyle, reproductive, use of health services and child and mental health, were associated with early cessation of EBF.

Table 2 shows the results of the multivariate analysis. The association between SPVP and early cessation of EBF remained statistically significant even after allowing for confounders (Model I). Yet, when the variables representing 'child health', 'utilization of health services' and 'degree of maternal self-esteem' were introduced as possibly intervening in the process, the hazard ratio reduced from 1·30 to 1·17 and lost significance. The inclusion of the first and second variables in the multivariate model reduced the SPVP point estimate by only 0·5 % and 3·3 %, respectively, but adding 'maternal self-esteem' led to an almost 9 % reduction and to loss of statistical significance (data not shown).

Whereas all of the variables fitted in Model I stayed statistically significant, the variables depicting the economic situation (BCEC), maternal age and gestational age at the beginning of the prenatal period ceased to be significant at the 0·05 level in Model II.

The probability of early cessation of EBF was also higher among women who were suspected of alcohol misuse during pregnancy and/or postpartum. Early cessation also increased: according to the mother's perception of her baby's declining health; among those who did not deliver their children in maternity homes with baby-friendly initiatives or delivered in those pending accreditation; and among women with low self-esteem.

Figure 2 shows the relationship between SPVP and the duration of EBF. Bearing a multivariate scenario described by Model I, the likelihood of children remaining in EBF among women not exposed to SPVP is consistently higher than among women exposed to SPVP throughout the postnatal period.

Discussion

The present study adds to the knowledge on IPV and maternal breast-feeding by providing evidence of the relationship between the physical component of this type of violence and early cessation of EBF. The results corroborate the hypothesis that SPVP is an independent risk factor for early cessation of EBF since SPVP still increases the risk of outcome by >30 %, even after controlling for confounding variables.

Women who are subjected to chronically stressful situations, such as situations of severe physical violence, tend to develop mental disorders ranging from minor ones such as anxiety and depressive symptoms to more serious forms with risk of suicide[31–33]. Many women in this situation suffer from psychological conditions. They are unable to perform routine activities of daily living, much less care for the newborn. Thus, it seems unlikely

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Table 1 Study population profile and univariate analysis

Characteristic	*n*	%	95 % CI	HR*	95 % CI	*P* value
Socio-economic						
Exclusive breast-feeding						
Yes	374	46·1	42·7, 49·5	–	–	–
No	437	53·9	50·4, 57·3			
Severe physical violence during pregnancy						
Yes	153	18·9	16·2, 21·6	1·43	1·12, 1·8	0·004
No	658	81·1	78·4, 83·8			
Mother's educational level						
Primary school incomplete	336	41·4	38·0, 44·8	0·97	0·95, 0·98	0·001
Primary school completed, secondary school incomplete	247	30·4	27·3, 33·6			
Secondary school completed	174	21·4	18·6, 24·3			
Higher education, whether completed or not	54	6·7	4·9, 8·4			
Mother worked during the postpartum period						
Yes	80	9·9	7·8, 11·9	1·69	0·96, 1·77	0·091
No	731	90·1	88·1, 92·2			
Brazilian Criterion of Economic Classification†						
A	15	1·9	0·9, 2·7	1·23	1·08, 1·41	0·002
B	81	10·0	7·9, 12·0			
C	370	45·6	42·2, 49·1			
D	330	40·7	37·3, 44·1			
E	15	1·9	0·9, 2·7			
Demographic and reproductive profile						
Sex of the child						
Male	375	46·2	42·8, 49·7	1·09	0·89, 1·33	0·406
Female	436	53·8	50·3, 57·2			
Age of the child (days)						
0–30	264	32·5	29·3, 35·8	2·04	1·79, 2·31	0·000
30–90	333	41·1	37·7, 44·5			
90–150	214	26·4	23·3, 29·4			
Mother's age (years)						
<20	184	22·7	19·8, 25·6	0·97	0·95, 0·99	0·001
20–35	554	68·3	65·1, 71·5			
>35	73	9·0	7·0, 10·9			
Number of children						
1	402	49·6	46·1, 53·0	0·92	0·79, 1·08	0·334
2	331	40·8	37·4, 44·2			
≥3	78	9·6	7·65, 11·6			
Mother's desire to get pregnant						
Yes, at that moment	251	30·9	27·8, 34·1	1·85	0·64, 2·32	0·064
Yes, but not at that moment	227	28·0	24·9, 31·1			
Did not want to get pregnant at any time	333	41·1	37·7, 44·4			
Lifestyle						
Inappropriate consumption of alcohol by the mother						
Yes	272	33·5	30·3, 36·8	1·44	1·17, 1·77	0·001
No	539	66·5	63·2, 69·7			
Maternal tobacco smoking						
Yes	171	21·1	18·3, 23·8	1·36	1·07, 1·71	0·011
No	640	78·9	76·1, 81·7			
Maternal illicit drug use						
Yes	57	7·0	5·2, 8·8	1·42	0·97, 2·07	0·072
No	754	93·0	91·2, 94·7			
Child health						
Mother's perception of her baby's health‡						
Excellent	407	50·2	46·7, 53·6	1·21	1·09, 1·34	0·000
Very good	156	19·2	16·5, 21·9			
Good	215	26·5	23·5, 29·5			
Regular	32	3·9	2·6, 5·3			
Inadequate	1	0·1	0·1, 0·3			
Gestational age (weeks)						
<37	69	8·5	6·6, 10·4	0·75	0·54, 1·05	0·095
≥37	742	91·5	89·6, 93·4			
Health services						
Beginning of the prenatal period (months)§						
<3	401	50·1	46·6, 53·6	1·31	1·08, 1·61	0·007
≥3	399	49·9	46·4, 53·3			
Type of maternity clinic‖						
Not accredited by the BFHI¶	412	30·6	27·4, 33·7	–	–	–
In the process of accreditation	151	18·6	15·9, 21·3	0·71	0·53, 0·97	0·031
Accredited by the BFHI	248	50·8	47·3, 54·2	1·04	0·84, 1·31	0·693

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Table 1 *Continued*

Characteristic	*n*	%	95 % CI	HR*	95 % CI	*P* value
Maternal mental health						
Maternal self-esteem (tertiles)						
Low	216	26·6	23·6, 29·7	0·71	0·63, 0·81	0·000
Medium	314	38·7	35·3, 42·1			
High	281	34·6	31·4, 37·9			

HR, hazard ratio; BFHI, Baby-Friendly Hospital Initiative.
*For complementary log–log model.
†Variable operationalized on five decreasing levels of economic stratification (from A to E).
‡Variable with 810 observations.
§Variable with 800 observations.
‖Variable represented by BFHI – the variable did not present a linear effect.
¶Reference category.

Table 2 Multivariate analysis by means of Models I and II: relationship between SPVP and EBF

	Model I			Model II		
Variable	HR*	95 % CI	*P* value	HR	95 % CI	*P* value
SPVP	1·30	1·01, 1·65	0·043	1·17	0·89, 1·53	0·260
BCEC†	1·18	1·03, 1·36	0·018	1·15	0·99, 1·34	0·066
Mother's age	0·98	0·96, 0·99	0·014	0·98	0·97, 1·00	0·108
Inappropriate consumption of alcohol by the mother	1·34	1·08, 1·65	0·008	1·32	1·06, 1·65	0·013
Mother's perception of her baby's health				1·14	1·02, 1·27	0·023
Type of maternity clinic						
Not accredited by the BFHI‡				–	–	–
In the process of accreditation by the BFHI				0·59	0·42, 0·82	0·002
Accredited by the BFHI				0·86	0·67, 1·08	0·207
Beginning of the prenatal period§				1·21	0·98, 1·49	0·078
Maternal self-esteem				0·96	0·94, 0·99	0·008

SPVP, severe physical violence during pregnancy; EBF, exclusive breast-feeding; HR, hazard ratio; BCEC, Brazilian Criterion of Economic Classification; BFHI, Baby-Friendly Hospital Initiative.
*For complementary log–log model.
†Variable operationalized on five decreasing levels of economic stratification (from A to E).
‡Reference category.
§Variable with 800 observations.

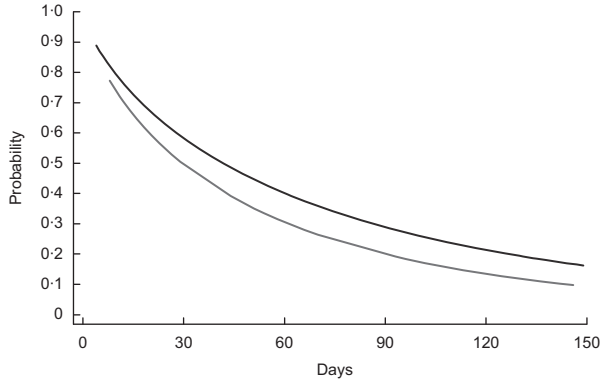

Fig. 2 Probability of remaining in exclusive breast-feeding according to the occurrence or not of severe physical violence during pregnancy (——, no; ——, yes; curves fitted according to Model I, with covariates set at their mean values)

that a mother who lives under conditions of severe violence would find the right environment and, given her own priorities, perhaps the willingness to perform such a demanding task as breast-feeding[8,34–35].

Interestingly, the independent effect of SPVP could not be ratified once the variables related to child health, use of health services during the prenatal period and the degree of maternal self-esteem were introduced. These results suggest that the effect of SPVP in reducing EBF is partly due to the diminished self-care and care of the child as captured by a poorer health-care service attendance during pregnancy and delivery, which is a practice that usually goes in tandem with low self-esteem following repeated and degrading experiences of IPV, and by a worsening of the child's health.

Keeping a pregnant woman away from adequate assistance on account of late entry, small numbers of prenatal care appointments or because the mother gave birth in a maternity home that does not explicitly encourage breast-feeding (e.g. BFHI) makes professional guidance on the practice and importance of EBF fairly difficult. This also reduces the chances of sharing experiences with other pregnant women, especially in joining organized breast-feeding groups held in health centres and maternity homes, which is recognizably an effective incentive to initiating and prolonging breast-feeding[36,37]. Moreover, poor-quality health care during the prenatal, delivery and/or postpartum periods may be associated with the worsening health status of children and, in turn, may negatively influence the establishment of long-term EBF.

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Likewise, the proposition that reduced maternal self-confidence and self-esteem is sometimes in the path between SPVP and EBF seems quite tenable. This hypothesis is strengthened by connecting previous findings pointing out that low confidence and feelings of worthlessness are consistent with the long-term psychological consequences of SPVP victimization[38,39], and with other studies indicating that the psychosocial well-being of women during pregnancy is an important protective factor for early weaning[5,40–47]. The importance of maternal self-esteem as a mediator of the relationship between SPVP and EBF is also reasonable when comparing the gradual effects of introducing the dimensions in the multivariate model. On a practical level, acting upon improving a woman's self-esteem and confidence during the prenatal and postpartum period may have beneficial offshoots at several levels. This would not only be a means to break the cycle of violence but would also be of help in improving the woman's attitude towards herself and her offspring, and would ultimately have a positive effect on breast-feeding.

The results of the present study must be seen in the light of its strengths and limitations. On the positive side stands the quality of information on the exposure (SPVP) and outcome (EBF) of interest. The CTS2 intersperses items depicting overt situations of violence for settling conflicts between intimate partners with socially acceptable ones, thus increasing its acceptability[16]. The instrument's adequacy has been ratified by the auspicious psychometric evaluations carried out in different contexts, be it in Brazil[18–20] or elsewhere[48–50]. The option for collecting data after childbirth was another positive point, since applying the instrument during the postpartum period may have helped to detect situations of violence occurring or intensifying right at the end of pregnancy[51]. The multivariate approach used to analyse the data, based on a comprehensive theoretical model as a guide to control important potential confounders and test for possible mediators, may also strengthen the validity of the results[52].

The approach used to characterize EBF may also be commended. The literature suggests that the type of current status approach based on a single recall may lead to an overestimation of the prevalence of children being breast-fed[29,53]. Accordingly, the ideal procedure would be to collect information on breast-feeding of children under the age of 2 years by direct observation in their homes through daily visits. This proved to be unfeasible in the present study, given the cross-sectional approach to collecting information. This option took into account the fact that intimate violence may not be studied through follow-up designs in most situations. For ethical reasons, the detection of violence would forcibly initiate a series of measures aimed at mitigating, reducing or even interrupting/ending the exposure of interest, which would inevitably alter the informative ability of the study. However, the slightly longer recall period (7 d) attempted to avoid overestimating the outcome, to the extent that it would enable the recovery of the child's usual feeding pattern beyond the periods of acute illness or recovery. Both periods are traditionally associated with increased breast-feeding[53,54].

A drawback of the present study is the impracticality of separately studying the role that different types of violence (psychological, minor physical and severe physical) play in the duration of breast-feeding on account of the reduced number of women subjected exclusively to each type. Since many cases of SPVP also involved situations of psychological violence and milder forms of physical violence, doubt exists as to whether it is the occurrence of severe forms that actually leads to increasing the likelihood of weaning or if the effect results from simultaneous victimization to different facets of IPV. Future research investigating the specific role that each type of violence has in the initiation and duration of EBF would help in setting up more targeted strategies to be used in health services.

Despite these limitations, results suggest that it would be unwise to disregard more extreme physical types of IPV in the management of breast-feeding. Sensitizing and expanding the awareness of health personnel with regard to investigating the occurrence of family conflicts and other psychosocial issues while attending to women's and children's health before and after delivery is critical. Detecting SPVP early on, thus enabling immediate referral along with effective counselling on the practice and advantages of EBF, would certainly increase the chances of delaying breast-feeding. Reciprocally, early cessation of EBF could serve as a sentinel event of situations of conjugal conflict. The knowledge that a puerpera is having a hard time breast-feeding in the absence of any other clinical and social factors as an explanation may be a useful lead for suspecting cases of IPV and a first step towards an early detection of the problem.

The findings were consistent with the basic hypothesis holding SPVP as a risk factor for early cessation of EBF, thus corroborating some previous studies[10,11] and refuting others[12–14]. Nevertheless, there is a long way ahead before reaching a more complete understanding of the processes underlying this relationship. In this sense, the present study should be seen as contributing towards understanding early weaning; however, new research is still necessary to explore in greater depth the role of the various forms of IPV in the initiation and duration of maternal breast-feeding. An agenda comprising studies carried out in broader contexts would be welcome, since the present findings are limited to families using public PHC services. Studying specific high-risk groups that are usually followed up in more complex health-care services (e.g. premature babies or infants with neurological problems) may shed some light on the intricacies of IPV on EBF. Similarly, much would be gained from focusing on families of higher socio-economic status who tend to be seen more often in private health-care services.

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