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Child Mental Health in Nepal

An epidemiological study of emotional and behavioral problems (EBP) among Nepali schoolchildren reported by parents and teachers

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Abbreviation

ADHD	Attention Deficit Hyperactivity Disorder
ASEBA	Achenbach System of Empirically Based Assessment
CBCL	Child Behavior Checklist
CBS	Central Bureau of Statistiscs
DBD	Disruptive Behavior Disorder
DSM	Diagnostic and Statistical Manual
EBP	Emotional and behavioral problems
HICs	High-income countries
ICD	International Classification of Diseases
LMICs	Low-and-middle-income countries
MoE	Ministry of Education
MoH	Ministry of Health
NHRC	Nepal Health Research Council (NHRC
RA	Research Assistant
SD	Standard Deviation
SDQ	Strengths and Difficulties Questionnaire
SES	Socio-economic status
TRF	Teacher Report Form
UNDESA	United Nations Department of Economic and Social Affairs
UNICEF	United Nations International Children's Education Fund
YSR	Youth Self-Report

Abstract

Background

There is a substantial gap in our knowledge about the prevalence, magnitude, and correlates of child emotional and behavioral problems (EBPs) in Nepal. In addition, little is known about the agreement between parent and teacher reports on EBP among Nepali children. Therefore, a large-scale survey in the general population was undertaken to fill this gap by examining the prevalence, magnitude, and correlates, as well as cross-informant agreement between parents and teachers regarding child EBPs.

Methods

This is a cross-sectional, observational study among schoolchildren aged 6-18 years from 64 schools selected from 16 districts of the three geographical regions of Nepal, including rural, semi-urban, and urban areas. We used the Nepali version of the Child Behavior Checklist (CBCL)/6-18 years completed by parents and the Teacher Report Form (TRF)/6-18 as screening instruments. We used questionnaire to collect background information and assess possible family correlates, including parental education, family structure, migrant worker parents, parental mental and physical illness, family conflicts, and child-rearing reported by parents. The prevalences of child EBPs were computed based on American norms. Comparisons of parent-reported EBPs between genders and across the seven largest castes and ethnic groups were carried out by analysis of variance. The associations between family variables and child internalizing and externalizing problems were analyzed using bivariate correlations and multiple regression. Linear mixed model analysis was used for group comparisons of TRF scale scores and for computing intraclass correlations of teacher reported EBPs. Correlations between the CBCL and TRF scale scores were analyzed using Pearson's correlation test.

Results

The prevalence of parent and teacher reports of Total Problems found in this study were 19.1% and 15.4%, respectively. In both the parent and teacher reports, the prevalence of internalizing problems was higher than that of externalizing problems. The mean CBCL scale scores for Total, Externalizing, and Internalizing problems were 29.7 (standard deviation, SD 25.6), 7.7 (SD 8.0),

and 9.1 (SD 8.1). Corresponding mean TRF scale scores were 26.9 (SD 24.5), 6.1 (SD 7.2), and 7.9 (SD 7.3) respectively. The mean CBCL score was significantly higher than the mean TRF score for the 90 common items. For both parent and teacher reports, mean scores for Total Problems and Externalizing Problems were higher among boys than girls. The lowest Hindu caste (Khas Kaami) scored the highest and the indigenous Tharu group scored the lowest on all problem scales when comparing EBPs for different caste and ethnic groups. CBCL scores of EBP were higher in the rural areas of the Mountains and Middle Hills regions, whereas in the Tarai region, these scores were higher in the urban areas. The size of the effect was small in all the tests.

Using parent reports and bivariate analysis, we found that mental and physical illness in parents, conflict in the family, parental disagreement in child-rearing, and physical punishment of the child correlated positively with both Internalizing Problems and Externalizing Problems. The same associations were found by using multiple regression analysis with small effect size. In addition, parental education, family structure, and migrant worker mothers were associated with Externalizing Problems.

Cross-informant agreement between parents and teachers was moderate (r=.38). The agreement for Externalizing Problems was r = .37 and the agreement for Internalizing Problems was r = .34. Moderate to low correlations were found for all syndrome scales, with coefficients ranging from r=.26 (Social Problems) to r=.37 (Attention Problems). The effect of child gender on parent-teacher agreement was significant only for Internalizing Problems, with a higher agreement for girls than for boys with small effect sizes.

Conclusion

Our study showed that child EBP scores varied according to gender, caste/ethnic group, and living area. The cross-informant agreement between parents and teachers was found to be moderate and varied according to the type of problems and the child's gender. Further, the study found that child mental health problems were associated with several family risk factors, underscoring the importance of obtaining information about family correlates when evaluating and treating children in Nepal. Finally, the study points to the need to acquire information from multiple sources when assessing children with mental health problems.

List of Papers

Paper I:

Ma J, Mahat P, Brøndbo PH, Handegård BH, Kvernmo S, Javo AC (2021) Parent reports of children's emotional and behavioral problems in a low- and middle- income country (LMIC): An epidemiological study of Nepali schoolchildren. PLoS ONE 16(8): e0255596. https://doi.org/10.1371/journal.pone.0255596

Paper II

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Paper III

Ma, J., Mahat, P., Brøndbo, P. H., Handegård, B. H., Kvernmo, S., & Javo, A. C. (2022). Teacher reports of emotional and behavioral problems in Nepali schoolchildren: to what extent do they agree with parent reports?. *BMC Psychiatry*, *22*(1), 1-10.

1 Background

This thesis focuses primarily on emotional and behavioral problems (EBPs) of children and adolescents in Nepal. Mental health is shaped to a great extent by social, economic, and environmental factors. Environmental adversities increase the risk of mental health problems in children. Poverty, low social position, negative life events, family disruption, and negative child-rearing practices put children at a higher risk of psychosocial and mental health problems. Unfortunately, children and adolescents in Nepal are exposed to many such factors. Nepal is classified among the low-and-middle-income countries (LMICs). It has a culturally diverse population, with 126 different castes and ethnic groups. Paper I of the present thesis contributes to filling the knowledge gap about the prevalence and magnitude of EBPs in the seven largest castes and ethnic groups of Nepal. Paper II focuses on the family factors that contribute to EBPs, and Paper III focuses on the cross-informant correlation between parents and teachers on child EBP.

The government of Nepal has allocated less than 1% of its total health budget for mental health, with a negligible portion of this amount dedicated to child and adolescent mental health services. The country still has no official child and adolescent mental health policy, and child and adolescent mental health services are poor, with only one outpatient clinic devoted to these services in the whole country, and no inpatient facilities.

To inform the government regarding child and adolescent mental health, epidemiological data on EBPs in Nepali children are needed, as is an exploration of the association between environmental/family factors and child EBPs. This thesis also includes an investigation on the agreement between parent and teacher reports on child EBPs.

In the introduction, concepts and topics that are important for the present work, but which are not fully defined or described in the papers, are further elaborated.

2 Introduction

2.1 Prevalence and magnitude of child's EBP

One-third of the world's population are children, and the majority live in LMICs (2016 World Population Data Sheet; www.prb.org). Studies have shown that an estimated 10-20% of children and adolescents worldwide are affected by mental health problems, and that the prevalence of child and adolescent mental health problems in LMICs might be as common as in high-income countries (HICs) (Kieling et. al., 2011). A 2015 meta-analysis of the prevalence of mental disorders in children and adolescents showed a worldwide pooled mean prevalence of 13.4% (Polanczyk et al., 2015).

A meta-analysis of 51 Asian countries conducted in 2010 showed a general prevalence of child and adolescent mental health problems of 10-20% (Srinath et al., 2010). The reported prevalence of child and adolescent mental health problems in India, which borders Nepal, varies across studies. In one meta-analysis of 16 community-based studies and 7 school-based studies, including 14,594 and 5687 children and adolescents in India, respectively, a prevalence of 6.5% was reported the community-based studies and 23.3% in the school-based studies (Malhotra & Patra, 2014).

An epidemiological study of child mental health problems, including 19,711 children, was conducted in 2015 in China using the Chinese version of the Child Behavior Checklist (CBCL). This study found an overall prevalence of child mental health problems of 19.1% (Qu et al., 2015). There was a higher prevalence of mental health problems in boys (21.8%) than in girls (16.4%).

A large, international, multicultural study done by Rescorla and colleagues in 2007 looked at EBPs reported by parents of children aged 6-16 years in 31 societies using the Child Behavior Checklist (CBCL) as instrument, found an overall mean problem score of 22.5 (SD: 5.6). Further, they found that boys scored significantly higher than girls on Total Problems. However, for Internalizing Problems, girls scored higher than boys, especially in the age group 12-16 years. Mean Internalizing Problems scores tended to increase slightly with age. Boys had higher Externalizing Problems scores than girls, especially at ages 6-11, but these scores tended to decrease with age (Rescorla et al., 2007). Another meta-analysis by Rescorla and colleagues assessed teacher reported EBP in 21 countries, using the Teacher Report Form (TRF). They demonstrated that 15 of the 21 samples had mean Total Problem scores within 1.0 SD (6.2) of the overall mean of 21.6

(Rescorla et al., 2007). In the same study, teacher-reported gender effects were consistent across countries for Externalizing Problems and Attention

Problems, with boys scoring significantly higher than girls in most countries. Based on data from 31 societies, Achenbach & Rescorla, constructed different norm groups (high, medium, and low) for the Achenbach System of Empirically Based Assessment (ASEBA) instruments based on the omnicultural mean of 22.5 (SD=5.6), which was found by averaging the Total Problem scores of the 31 societies. Nepal has not yet been included in the ranking of countries for the CBCL and the TRF, due to the lack of internationally published studies.

2.2 Child emotional and behavioral problems in Nepal

Nepal is a multi-ethnic and multi-cultural society with more than 125 castes and ethnic groups. Children less than 18 years of age constitute about 42% of the total population (Central Bureau of Statistics of Nepal, 2011). The Ministry of Health and Population of Nepal has estimated that about 15-20% of this population (2-3 million children) may suffer from some form of mental disorder (National Mental Health Policy Nepal, 2017; Kunwar et al., 2017).

Up till now, no large epidemiological study on the magnitude of EBP in Nepali children has been published in the international literature. Indeed, very few studies on child mental health have been carried out in Nepal. The few studies that do exist are small, descriptive studies based on the analysis of cases from hospital registers and have not been published internationally. Few studies have attempted to assess EBP among schoolchildren. There are two studies that assessed EBP among adolescents (aged 11-19 years) using the youth report of the "Paediatric Symptom Checklist" (Y-PSC) (Bista et al., 2016; Timilsina et al., 2018). In those studies, the prevalence of youth problems ranged from 12.1% (Timilsina et al., 2018) to 17.0% (Bista et al., 2016). One earlier, larger epidemiological unpublished PhD dissertation study on EBP in school children aged 6-18 years found the prevalence of 14.7% (Mahat, 2007).

Another, qualitative study explored parents' and teachers' perceptions of child behavioral problems in a rural population (Adhikari et al., 2015). It indicated that children in rural Nepali communities may have several behavioral problems; the most prominent problems described were externalizing/conduct problems. Most behavioral problems were reported among boys aged 12-15 years and within the poor and less fortunate castes, such as the Dalit ("the untouchables").

Another study by Karki and colleagues used the Youth Self-Report (YSR) questionnaire to assess the prevalence of self-reported EBPs among 12-18-year-olds selected from urban and rural areas of Western Nepal (Karki et al., 2015). The study found a prevalence of EBPs of 15%. Girls had higher scores than boys for anxiety/depression, while boys had higher scores for delinquent behavior. Adolescents from urban areas exhibited significantly higher scores on most of the problem scales than adolescents from rural areas.

2.3 Agreement between parents and teachers on child EBP

Assessment of emotional and behavioral functioning in different social settings is an important and challenging part of clinical psychiatric assessments of children, as their behavior is often situation-specific (Achenbach, 2017). Multiple informants, such as teachers and parents, and information gathered across multiple settings, such as classroom and home, are considered best practice and are highly recommended to achieve a comprehensive picture of children's emotional and behavioral functioning (De Los Reyes, 2015; Lapalme et al., 2020; Martel et al., 2017). Adult informants are important sources of information when assessing child EBP, and parent and teacher reports are the most common sources of information (Rescorla 2014). Indeed, a single informant from one specific situation might not effectively capture the EBPs of children and adolescents in different contexts. Although parent reports of children's EBP can be informative and convenient, they might not be sufficient for school children. This is because parent-child interaction occurs in the family context, but school children spend most of their time at school, where teachers may have ample time and opportunity to observe students' behavior and to make accurate comparisons, among children of similar ages, as to age-appropriate behaviors (Humphrey & Wigelsworth, 2016). Furthermore, teachers can observe children's behavior in a structured environment that is different from their home setting. However, teachers' observations of their students' behavior are likely to vary depending on the type of problems being rated (e.g., externalizing or internalizing problems), and the demographic characteristics of their students (e.g., gender, ethnicity, parental educational level) (Cheng et al., 2018; Liu et al., 2001; Zwirs et al., 2011). Likewise, parents' observations of their children's behavior vary according to the type of problems. Parents tend to report more child problems than teachers, a feature that is commonly found in studies worldwide. Earlier studies that used the CBCL and the TRF found that parents tended to report higher scores

than teachers on all problem scales (Salbach-Andrae et al., 2009). Similar findings have been reported by other, more recent studies which compared mothers' and teachers' ratings of the different types of EBPs (Huang 2017; Rescorla et al., 2014; Stone, Speltz, Collett, & Werler, 2013; Strickland, Hopkins, & Keenan, 2012). However, we do not know if the same pattern holds true in a Nepali context.

Studies from different countries that investigated parent-teacher agreement on EBP for the same child have found low to moderate agreement. A 2015 meta-analysis validity study, which included 341 studies worldwide, reported low to moderate cross-informant correspondence estimates (mean Internalizing Problems: r=.25; mean Externalizing Problems: r=.30; mean overall: r=.28) (De Los Reyes, 2015). In most studies, the parent-teacher agreement was higher for Externalizing Problems than for Internalizing Problems (e.g., Deng, 2004; Rescorla et al., 2014; Streimann et al., 2020). This could be because externalizing problems are more visible and hence more likely to get the attention of both parents and teachers, resulting in more consistent ratings across different contexts (Carneiro, 2021; Deng, 2004; Satake, 2003). Interestingly, there are inconsistent results as to the influence of child gender on parent-teacher agreement on EBP. While some studies suggest that the parent-teacher agreement is not affected by child gender (e.g., De Los Reyes & Kazdin, 2005; Gomez, Vance, & Gomez, 2014; Gross et al., 2004), other studies have found that child gender does affect the agreement (Berg-Nielsen et al., 2012; Cheng et al., 2018; Deng, 2004; Huang, 2017; Rescorla et al., 2014; Winsler & Wallace, 2002). Some studies have reported a higher parent-teacher agreement for girls than for boys (e.g., Deng et al., 2004; Huang, 2017), whereas others reported a higher parent-teacher agreement for boys (e.g., Berg-Nielsen et al., 2012; Cheng et al., 2018). The inconsistencies in findings might be due to differences in the age groups being studied, the use of different instruments, and comparisons on different problem scales. Cultural context might also affect the cross-informant agreement for girls and boys differently (Streimann, 2020).

Although the importance of multi-informant assessment of child EBPs has been recognized worldwide, there has been little systematic research on teacher versus parent ratings on child EBPs in LMICs. The present study is the first to compare the level of teacher and parent reports on child EBP and parent-teacher agreement in ratings in Nepal.

2.4 Environmental factors influencing EBP in children

2.4.1 Cultural differences in child emotional and behavioral problems

Specific causes of distress and impairment are defined and created by culture, and this has an impact on how symptoms are perceived. Culture in general may affect how child symptoms are recognized and interpreted by parents, teachers, and other caregivers (Miller, 2010; Olfson et al., 2014; Schwarz & Cohen, 2013). Additionally, child EBPs are influenced by culture's impact on elements that are close to childhood development such as parental styles (Canino & Alegría, 2008; James et al., 2014). However, research evaluating community samples from all over the world and using dimensional measures, found that child psychopathologies were more similar than different, with only very modest variations in the rate of symptoms (Crijnen, Achenbach, & Verhulst, 1997; Ivanova et al., 2007; Merikangas, 2013; Morris et al., 2011; Rescorla et al., 2011; 2012; Verhulst & Achenbach, 1995; Verhulst et al., 2003).

Efforts to compare the presentation of symptoms across different cultures are hampered by the difficulty in disentangling the effect of culture from that of different methodological approaches. Fortunately, a large number of studies have used the same symptom scales as measurement, such as the Achenbach System of Empirically Based Assessment (ASEBA) (Achenbach et al., 2008) and the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) to assess dimensional psychopathology in children and adolescents in a variety of countries By using the same instrument and comparable study methods, differences that are detected across studies and countries can be interpreted as resulting from geographic, social and/or cultural aspects.

A cross-cultural study from 45 societies using the CBCL/6-16 years (Rescorla et al., 2019) tested the effects of both society and culture on parents' rating of children's problems. The 45 societies were nested within 10 culture clusters. Societal differences accounted for 3.8-10.7% of the variance in kinds of problems, while differences between culture clusters (e.g., Anglo vs.

Confucian) accounted for 0.1% - 10.0%. By contrast, differences associated with parents' ratings of individual children accounted for 85.5% - 93.3% of the variance.

2.4.2 Living area (rural/urban) affecting child EBP

Reports have shown that there are disparities in the living standards of rural and urban residents (Liu, 2005; Zhang et al., 2011). Rural and urban areas also differ in traditions and customs, and it has been reported that interpersonal relationships also differ between rural and urban residents. These differences could lead to different mental health outcomes in children. The magnitude of children's mental problems in rural versus urban areas varies across studies. Some have found that children living in rural areas have more mental health problems than children living in semi-urban or urban areas (Heflinger et al., 2015; Mahat, 2007). This might be due to poverty and poor housing conditions, or exposure to certain stressors that are absent in urban areas, like restricted social networks, geographic isolation, and limited community resources (Atav & Spencer, 2002; Leventhal et al., 2000). Other studies have found that children living in urban areas have more mental health problems (Canino & Alegrıa, 2008; Karki et al., 2015; Shahini et al, 2015), suggesting that mental health is negatively affected by urbanization, i.e., exposure to stress and vulnerability factors such as overcrowding, low social support, inadequate security, and increased violence (Srivastava, 2009). One study from China reported that some behavioral problems, like attention deficit disorder (ADHD) and disruptive behavior disorder (DBD), were higher in children from urban areas, whereas substance use disorders were found to be higher in children from rural areas (Qu et al, 2015). Other studies have found no significant differences in mental health problems in children and adolescents from rural and urban areas (Howell et al., 2008; Lyneham et al., 2007). It should be noted that rural-urban differences in one country cannot be generalized to other countries, due to differences in economic development and cultural orientations (Zhang et al., 2011).

2.4.3 Family and parenting factors influencing child EBP

The international literature has consistently documented the influence of family and parenting factors on children's behavior and psychosocial functioning (Gorostiaga et al., 2019; Plass-Christl et al., 2017; Yang et al., 2019; Yockey, 2019). However, several studies have underlined that EBPs

can be predicted by genetic factors, and epigenetics may foster the onset of both emotional and behavioral problems through gene-environment interactions (Wlodarczyk, 2017). In addition to genetics, stressful family contextual factors, such as parental psychopathology, somatic illness in parents, family conflicts, as well as impaired parenting may affect child mental health and psycho-social development (Cummings et al., 2005; Papp et al., 2004).

Family risk factors for developing mental health problems include being from a socioeconomically deprived family, family disruption, poor physical health in the family, and domestic violence. Children living in LMICs are far more exposed to these family risk factors than children living in HICs (Patel, 2007). However, not much research has been done on the association between family risk factors and child behavioral problems in LMICs, including Nepal. Indeed, until now, there has been no documentation of family correlates of child mental problems in Nepal on a national level. A literature search (PubMed, Google scholar, and PsycINFO) revealed only two small-scale studies on correlates of child behavioral problems. One was done among adolescents in Hetauda Municipality in Central Nepal, and found that students from nuclear families, students living with a single parent, students of illiterate parents, and students whose families had frequent disputes, were more likely to have a psychosocial dysfunction (Bista et al., 2016). A qualitative study from a rural area of Nepal suggested that an unfavorable family environment and physical punishment of children might lead to an increase in emotional problems (Adhikari et al., 2015). The sparse amount of research on family correlates of child EBPs points to the fact that more and larger studies are warranted, especially studies on a national level.

As for the effect of parental education level on child EBPs, studies suggest that a lower parental education level is associated with more child EBPs and less psychological wellbeing (Hosokawa & Katsura, 2018; Sonego et al., 2013; Von Reuden et al., 2006). Other studies have demonstrated that children from families with a parental education level show a lower risk of mental health problems than their peers from families with a lower parental education level (Meyrose et al., 2018; Reiss et al., 2019). Possible explanations may be that education helps parents make better child-rearing decisions and increases parental awareness of mental health problems in children and adolescents (Oreopoulos, 2011).

Another family risk factor that can affect children's physical and psychosocial health is early motherhood (Wodon et al., 2017), which may be a serious risk factor for child EBP. Worldwide, an estimated 23 million girls below the age of 15 years become pregnant every year, especially in developing countries (UNDESA, 2017). Among the South Asian nations, Nepal has the second highest rate of adolescent pregnancy (MOH/Nepal, 2017), with approximately 40% of women becoming mothers before the age of 20 (Choe, 2005). A recent meta-analysis found a significant association between young maternal age and children's externalizing behavior (Lee, 2020). An earlier review study showed that young mothers reported more EBPs in their children (Reid et al., 2007).

Further, studies suggest that children raised by single mothers may be at increased risk of child EBPs (Nieuwenhuis & Maldonado, 2018; Waldfogel et al., 2010). Findings from studies examining the association between extended family households and child EBP are ambiguous. Some have suggested that living in an extended family has a positive impact on children (Kreider, 2011), whereas others have found that children in extended family households show higher levels of behavioral problems than those in nuclear families (Kang, 2019; Mollborn, 2011; Noah, 2018). The cultural/economic context is probably important in these studies and may explain the differences in results. In some societies, living in an extended family may be a sign of low socioeconomic status, whereas in many countries, it may be culturally established as a good way to organize family life, offering several advantages. However, few studies have explored the effects of this factor on child EBP in LMICs like Nepal.

Another family factor that may influence child EBP is the increasing number of parents who are migrating in search of employment opportunities, leaving their children at home. This phenomenon is particularly common in LMICs. A recent systematic review and meta-analysis showed that, compared with the children of non-migrant parents, left-behind children had an increased risk of mental health problems (Fellmeth et al., 2018). Several studies from China reported that left-behind children experienced more mental health problems, poorer school performance, and early school dropout (e.g., Hu et al., 2014; Wang et al., 2015; Zhao et al., 2014).

Several studies have found that parental psychopathology may increase the risk for both internalizing and externalizing behavior problems in children (e.g., Breaux et al., 2013; Cummings et al., 2005; Papp et al., 2005). Similarly, studies suggest that parent's physical illness can lead to negative psychological outcomes in children, including increased rates of internalizing and externalizing behavior problems (Chen et al., 2017; Sieh et al., 2010).

Conflict in the family, in particular between parents, is another significant risk factor for the development of psychopathology in children (Cummings & Davies, 2010; Davies et al., 2016). A meta-analysis by Teubert and Pinquart showed that child-rearing disagreements between parents were significantly linked to both internalizing and externalizing child problems (Teubert & Pinquart, 2010).

Finally, harsh parenting, such as using physical punishment to control a child, has also been associated with child EBP. In a comprehensive meta-analysis of 160,927 children from both US based- and international studies, it was found that spanking was associated with child EBPs (Gershoff & Grogan-Kaylor, 2016). Another meta-analysis with children from several countries found that physical punishment was associated with adverse child outcomes, especially in countries in which physical punishment was less culturally accepted (Lansford et al., 2005). In Nepal, physical punishment of children is widely accepted (UNICEF, 2004). A recent study from Nepal suggested that child behaviors, such as addiction (cigarette, alcohol), not paying attention in school, aggression, not obeying parents and teachers, and stealing, may provoke physical punishment by parents and teachers (Adhikari et al., 2015). However, there is little documentation on the prevalence of physical punishment on a national level and its consequences.

3 Aims of the study

The overall aim of this thesis was to assess the prevalence and magnitude of EBP of children and adolescents as reported by parents and teachers, to assess the association between family variables and child EBP, and to examine the agreement between parent and teacher reports of child EBP.

More specifically, the objectives of the three papers were:

- To assess the prevalence and magnitude (mean scores) of parent-reported EBP, including gender differences, in Nepali schoolchildren aged 6-18 years, as well as to examine within-country diversity by comparing child problems between:
  a) castes/ethnic groups
  b) geographic regions
  c) rural/urban areas
- To assess the associations between selected family variables and internalizing and externalizing behavior problems in Nepali schoolchildren
- To examine the prevalence and magnitude of teacher-reported child EBP, the agreement between teacher and parent ratings, and how this agreement varied according to type of problem and child gender.

4 Materials and methods

4.1 Context of the study: study site and population

Nepal is a mountainous, landlocked country situated in the South Asian Region, bordering China's Tibet in the North and India in the South, East, and West. It is a LMIC with a per capita daily income of US$2.3 (United Nations' Human Development Report - UNDP, 2014). About one-fourth of the people live below the poverty level, i.e., earn less than US$1.25 per day. The country is topographically divided into three regions: The Himalayas (Mountain region) represent the Northern belt, the Middle Hills region lies between the Northern and Southern belts, and the Terai region represents the Southern belt. The Mountain region represents 35% of the total land area and 8% of the total population, the Middle Hills region represents 42% of the land and 45% of the population, and the Terai region represents 23% of the land and 48% of the population. There is a total of 16 districts in the Mountain region, compared to 39 in the Middle Hills region and 20 in the Terai region. About one-fifth of the people in Nepal (17%) live in urban areas (Central Bureau of Statistics of Nepal, 2011). The total population of children below 18 years of age is 11,767,935

which is 44.4% (22.5% boys and 21.9% girls) of the total population (Central Bureau of Statistics of Nepal, 2011).

4.2 Caste and ethnicity in Nepal

Nepal has about 126 different castes and ethnic groups which live in all three regions (Hangen, 2007). According to the 2011 Nepali demographic-social Census (Central Bureau of Statistics of Nepal, 2011), the Chhetri group is the largest, comprising 16.6% of the total population, followed by Brahmin-Hill 12.2%, Magar 7.1%, Tharu 6.6%, Tamang 5.8%, Newar 5%, and Khas Kaami (Dalit) 4.8% (Central Bureau of Statistics of Nepal, 2011). Among these seven largest groups, the Chhetri, Brahmin-Hill, and the Khas Kaami represent three of the four Hindu varnas. The next four largest groups: Magar, Tharu, Tamang, and Newar, all belong to the indigenous national groups, i.e., the Janajati/Adivasi (Central Bureau of Statistics of Nepal, 2011).

In Nepal, the term "caste" basically refers to a group of people who follow Hinduism, speak Nepali or any other Indo-Aryan languages, and are ranked hierarchically in the Hindu religious values of purity and impurity. Within the framework of the Hindu system, there are four "varnas" (social classes): Brahmins (the priestly class), Chhettri (kings and warriors), Vaishya (merchants), and Sudra (peasants and laborers). Beneath, there is still another group that is considered impure and untouchable - Dalits. Brahmins and Chhetri are considered the highest in the caste hierarchy, whereas Dalits are the lowest. Dalits represent the most economically marginalized and socio-culturally oppressed community in Nepal (Dahal et al., 2002; Kabeer, 2006; UNDP, 2008; Sunar, 2008). They are significantly below the national average in most development indicators, such as poverty (48%), literacy (40%), chronic childhood malnutrition (60%), food deficiency (85%), and life expectancy (48 years) (CBS, 2011). Furthermore, although Nepal's new constitution declared "no caste discrimination and untouchable free", the humiliating and degrading practice is still prevalent socially (Bhattachan et al., 2009; Cameron, 1998, 2009; Lamsal, 2012).

There are also various indigenous ethnic groups, known collectively as the Janajati/Adivasi in Nepal. They constitute over a third of Nepal's population but represent the minority in all of the

77 districts. The Janajati includes the ethnic groups Magar, Tharu, Newar, and Tamang, with a population exceeding 1 million each. They all have their own traditions, cultures and languages, and do not adhere to, nor fall under the Hindu caste system.

4.3 Education System of Nepal

There are 35,223 primary and secondary schools in Nepal (MoE, 2016). Of those, 84% are government schools and 16% are private schools. According to the Ministry of Education (MoE), 15.8 % of all enrollments at the basic education level (grades 1-8) are in private schools. Government schools are distributed nationwide, whereas private schools are most often located in urban settings. However, in the last three decades, Nepal has experienced a massive proliferation of private schools. For instance, in Kathmandu, nearly 70% of pupils now attend private schools, which deliver much higher quality education to the students compared to their public counterparts. Many government schools have few resources, especially in rural areas, and the quality of education in schools varies widely, depending on local resources and the availability of competent teachers (Koirala, 2015). Despite the Nepal government's huge efforts to improve the quality of education in government schools, their performance is still not satisfactory. Class size in government schools is also larger than in private schools. A study from 2015 found that teachers at government schools had low motivation and morale, poor working conditions, and insignificant professional assistance. In addition, there were non-participation of parents in school affairs, the lack of contributory role of the school management committee, poor school infrastructure, and unavailability of educational and reference materials are the major reasons for the low performance of government schools (Koirala, 2015). Better school management was seen as one of the key factors responsible for the good performance of private schools.

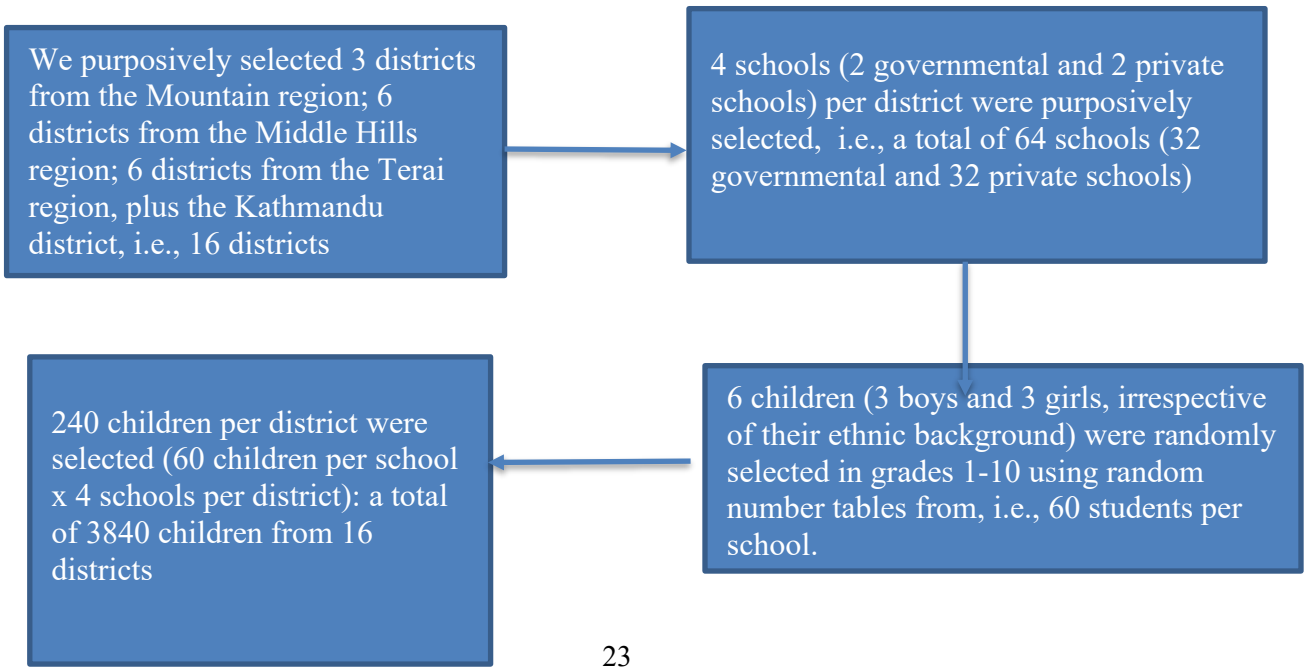
4.4 Participants and sampling procedure

The study is a nationwide, epidemiological, cross-sectional study of the general population of Nepal. We used parents and teachers of Nepali schoolchildren aged 6-18 years from different districts and different parts of the country as informants. Based on the population distribution of the three main geographical/ecological regions, we purposively selected three districts from the

Mountain region, and six districts each from the Middle Hills and the Tarai regions. However, as our study includes an examination of EBPs of children from different castes and ethnic groups, we needed to include a high enough number of participants in each group. Hence, the Kathmandu district was added to the sample because of its multicultural population (people from all castes and ethnic groups from all over Nepal migrate to the capital Kathmandu). The purposive sampling technique was chosen for cost-effectiveness and for ease of data collection and travel. In total, 16 districts were selected from all over the country.

Further, we purposively selected four schools in each district (two government schools and two private schools - schools for children with special needs and faith-based schools were not included) based on accessibility and referrals from schools - i.e., a total of 64 schools in the 16 districts. All school children aged 6-18 years were eligible for the study, irrespective of their castes and ethnic background. Six students each from grades 1 to 10 (3 boys and 3 girls) were randomly selected using random number tables. Children who were recorded in the school registration system, but were not attending the school, were not included. In schools with more than one class per grade level, all classes were grouped as a single grade. Thus, in each district, 240 children were selected, which gave a total of 3840 children.

Fig 1. Flow chart



Before commencing the data collection, a request letter had been sent to the district officer of all the selected districts asking for permission to conduct the research study in their district. Next, meetings with the school principals and school coordinators were conducted. A formal consent to perform the study was then received from the schools.

Thirty research assistants (RA) were recruited to collect data in the 16 districts, supervised by seven field supervisors. Before commencing data collection, all RAs attended a 2-day training and information program: one was conducted in Kathmandu for the supervisors and RAs from the districts around Kathmandu, and one in Nepalgunj city in the Tarai region for supervisors and RAs from the Western and far Western districts. During the program, attendees received information on the research project and instruments, the meaning of the different questions, how to answer queries that might arise, how to assist parents and teachers in completing the study forms, how to give advice, and how to cope with difficult situations. The training included role play, completing the study forms themselves, as well as discussions about various topics that were put forward. Throughout the data collection period, the work was monitored by the author of this thesis by means of frequent telephone check-ups, SKYPE meetings, and direct visits to the different districts.

After the schools were selected, research assistants met with and obtained written consent from school administrators. School administrators provided the parents of selected children with oral and written information, and invited them to participate in the study. Parents who could not come to the school were informed by home visits by a RA and invited to participate. Only mothers were used as informants. Fathers were not included due to capacity problems. For illiterate parents, the RAs verbally posed the questions, and helped the parents complete the forms. Both parents and children were given a small gift as an incentive to participate. Parents gave their informed consent to participate in the study, and for teachers to fill in the TRF for their child.

Research assistants and school administrators then held meetings with all teachers of students in grades 1-10 to inform them verbally and in writing about the study. All teachers gave informed consent to participate in the study.
Parents completed the Nepali version of the 2001 CBCL for children aged 6-18 years (CBCL/6-18). Teachers completed the Nepali version of the TRF for children aged 6-18 years (TRF/6-18) for the selected students in their class. Research assistants collected data from the TRF and CBCL between September 2017 and January 2018. Data plotting was done manually during the first half of 2018 by three research assistants, supervised and monitored by the author of this thesis.

The overall participation rate was 99.5%. The proportion of missing items was not more than 0.1% for any of the CBCL items.
Most schools teach boys and girls, and children from different ethnic backgrounds together. There are only a few schools for children with special needs. There are also a few faith-based schools that teach mostly religious content (e.g., Muslim schools). Today, about 94.5% of all Nepalese children go to school.

4.5 Measures

4.5.1 Selection of study tools

Nepali culture is different from Western cultures in many ways. As symptom/disorder severity and meaning vary across cultures, we decided to avoid the use of diagnostic categories belonging to the International Classification of Diseases (ICD)or Diagnostic Statistical Mannual (DSM), but rather to use tools that assess actual patterns of adaptive and maladaptive functioning in children, such as the Achenbach System of Empirically Based Assessment (ASEBA) or the Strength and Difficulties Questionnaires (SDQ).

To decide which of the two would be most appropriate as a screening tool to detect EBPs among Nepalese children, we conducted three focus groups, one with six schoolteachers, one with four parents from different ethnic groups, and one with seven health professionals (psychiatrists and clinical psychologists). The participants were each given: 1) a set of the parent and teacher versions

of the ASEBA: the CBCL/6-18 and the TRF/6-18, and 2 a set of the parent and teacher versions of the SDQ/4-16.

The discussions were mainly focused on the clarity and simplicity of the questions, their experiences of common problems in children, the time needed to complete the forms, and their cultural sensitivity. The participants, especially teachers and parents, highlighted the simpler and clearer nature of the questions in the ASEBA instruments, which they felt was essential. They also believed there was less chance to omit important information about the child when using the ASEBA instruments. Furthermore, they valued the open-ended questions in the ASEBA instruments, which give the responder the opportunity to describe other, new, or culture-specific problems not listed in the forms. The overall conclusion from the discussions was that all groups were more inclined toward using the ASEBA instruments, even if they thought that it might take longer to complete them. Based on this, we decided to use the ASEBA instruments as the main screening tools in our study.

The ASEBA instruments CBCL/6-18 and TRF/6-18 (Achenbach, 2009) are empirically based questionnaires that offer a comprehensive approach to assessing EBPs in children. They are user-friendly and have been developed through decades of research and practical experience worldwide to identify actual patterns of child functioning. They have been used in epidemiological studies involving school-based samples, community samples, as well as clinical samples of children from all socioeconomic backgrounds. They have been translated into over 90 languages, including into the Nepali language by a Nepali researcher (Mahat, 2007), and used in over 6500 studies and 80 societies and cultural groups. They provide multi-informant, multicultural assessments, and comparable scales across wide age ranges (Achenbach, 2009; www.aseba.org).

4.5.2 Child Behavior Checklist / 6-18 and Teacher Report Form / 6-18

Both the CBCL/6-18 and the TRF/6-18 contain 118 specific problem items, which are scored on a three-point Likert scale (0=absent, 1=occurs sometimes, 2=occurs often), plus two open-ended problem items. The CBCL is based on the child's functioning over the preceding 6 months, whereas the TRF covers functioning over the preceding 2 months. Most of the items on the TRF

have counterparts on the CBCL (90 common items, TRF_{90}, $CBCL_{90}$), but the CBCL items that teachers cannot assess (e.g., “have nightmares”) are replaced with items on behaviors they can observe (e.g., “disrupts class discipline”),

In both instruments, the problem items combine to form eight syndrome scales: Withdrawn/Depressed, Somatic Complaints, Anxious/Depressed, Rule-breaking Behavior, Aggressive Behavior, Social Problems, Attention Problems, and Thought Problems. There are some differences between the items that comprise the syndrome scales in the two instruments, the main one being the Attention Problems scale, for which the CBCL includes 10 items and the TRF includes 26 items. Some of the syndrome scales are further condensed into two broadband scales: Internalizing Problems (Withdrawn/Depressed, Somatic Complaints, Anxious/Depressed) and Externalizing Problems (Rule-breaking Behavior and Aggressive Behavior), and the Total Problems scale comprises all eight syndrome scales.

The internal consistency of the instruments has been reported to be good across countries. Results for our computations of Cronbach’s alpha for the eight syndrome scales for the CBCL/6-18 were: Withdrawn/Depressed: 0.71; Somatic Complaints: 0.79; Anxious/Depressed: 0.76; Rule-breaking Behavior: 0.76; Aggressive Behavior: 0.88; Social Problems: 0.73; Attention Problems: 0.80; and Thought Problems: 0.75. The alphas for the TRF/6-18 syndrome scales were: Withdrawn/Depressed: 0.79; Somatic Complaints: 0.78; Anxious/Depressed: 0.80; Rule-Breaking Behavior: 0.74; Aggressive Behavior: 0.89; Social Problems: 0.74; Attention Problems: 0.91; Thought Problems: 0.74.

4.5.3 Background information questionnaire

Parents were also asked to complete a background information questionnaire, which collected information on the child’s age, gender, education level, region of residence (Mountain region, Middle Hill region, Tarai region), and type of living area (rural, semi-urban, urban). It also included questions on family variables, such as parental education level (no education/illiterate, 1-8 years of education, 9-12 years of education, >12 years of education), migrant worker parents, (yes, no), and family structure (child living with a single parent, nuclear family, extended family), for which a single parent was defined as a widowed, divorced, or separated parent, a nuclear family

was defined as one with both parents and siblings, an extended family was defined as one with parents, siblings, and grandparents/immediate relatives. Questions about family life and child-rearing included whether any of the parents had mental illness (yes, no) or physical illness or disabilities (yes, no). Parents who answered yes were encouraged to further describe any symptoms. Information on conflicts within the family was collected with the question: "Has there been any conflicts between family members causing stress in the family during the past 6 months?", with the response options high, moderate, or low level of conflict. Parental agreement in child-rearing was assessed by the question: "Do you as parents agree as to child-rearing?", with the response options highly agree, somewhat agree, and totally disagree. We also asked whether the parents made frequent use of physical punishment to deal with the child's misbehavior (yes, no).

4.6 Statistical analyses

The ASEBA data management and SPSS statistics version 26.0 for Windows were used for all analyses. When computing the overall prevalence of EBPs in Nepal, sampling weights were used to account for the oversampling for some regions and age groups, the mountain region was oversampled and due to school sampling, ages above 15 years were under-sampled. Pearson's chi square test was used to test associations between categorical variables, such as demographic variables for the different castes and ethnic groups, child gender, and prevalence of EBPs. For group comparisons of mean scores on the different problem scales as reported by the parents, an analysis of variance was done. For comparisons involving more than three groups, post hoc comparisons were made using the Scheffé method, and when comparing two groups, Hedges' g was computed to indicate effect size. Partial eta squared was the selected effect size when more than two groups were compared.

Bivariate correlations (Pearson correlation and Kendall's tau-b) were first examined to assess the association between child internalizing or externalizing behaviors and family variables. Then, multiple regression analysis was used to assess the associations between the different independent variables and child EBP. In these regression analyses, all the independent variables were included in the model. Child age, child gender, and traumatic life events were used as control variables. The

main effects of the different correlates were then tested. Partial eta squared was selected for measuring the effect size.

Since one teacher filled out the questionnaire for 6 children, there was expected dependency within teacher. Therefore, linear mixed model analysis was used. To measure the relative magnitude of the differences between means, i.e., the effect size, we calculated Cohen's *d* (Cohen, 1988). Comparisons between genders on normal (score ≤60), borderline (score 60-63), and clinical (score ≥ 63) status for the teacher data were computed using generalized linear mixed model (multinomial distribution, cumulative logit link function, random intercepts on both the class and the school level). Intraclass correlations (ICC) for the teacher/class level and the school level were computed using linear mixed models via an unconditional means model (Singer & Willett, 2003).

Comparisons between the mean scores for the $CBCL_{90}$ and TRF_{90} were analyzed using repeated measures analysis of variance. Correlation between the TRF scale scores and the CBCL scale scores were analyzed using the Pearson's correlation test. A Fisher Z-transformation was used when comparing cross-informant correlations between boys and girls. Here we applied the effect size measure q for guidance about the magnitude of the correlation difference (Cohen, 1988). In addition, we computed Q correlations as Spearman correlations for each child to assess the within-child association between the $CBCL_{90}$ and TRF_{90}, as recommended in the ASEBA manual (Achenbach & Rescorla, 2001). The significance level used for all tests was 0.005.

4.7 Ethical considerations

All the participants were informed about the study and the information was given both as oral and written information. The research assistants verbally informed illiterate participants. The participants were informed about the right to withdraw from the study at any given point in time, without needing to state any reason. Privacy and confidentiality were ensured, such as anonymization of the participants' identities in the published articles. All participants were given time to ask questions about the study. No participants retracted their consent.

4.7.1 Ethical approval

Before commencing the study, ethical approval was obtained from the Ethical Review Board of Nepal Health Research Council (NHRC) (ref. no. 1875; reg, no: 71/2017). Both collection and storage of data were done according to their rules. The records from the study were kept strictly confidential and locked down so that no persons other than the researcher had access to them. All electronic information was coded and secured using a password protected file. All personally identifiable information has been removed from the data set, and no information was shared or published tha made it possible to identify any participant.

4.7.2 Funding

The study was funded by Child Workers in Nepal (CWIN) / Solidarity Action for Development, Norway FORUT. The funders had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscripts. All the authors of the three papers had declared that no competing interests existed.

5 Summary of the Papers

5.1 Paper I

"Parent reports of children's emotional and behavioral problems in a low- and middle-income country (LMIC): An epidemiological study of Nepali schoolchildren"

Very little is known about the interaction of ethnicity, culture, or type of settlement on mental health of Nepal – a highly diverse and heterogeneous country. Therefore, we aimed to assess the prevalence and magnitude of EBP in Nepali school children aged 6–18 based on parent reports, examine within-country diversity, and compare child problems between a) castes/ethnic groups, b) geographic regions, and c) types of living area with gender disaggregation.

We present the prevalence of the Achenbach classification of normal, borderline, and clinical status according to American norms, both for the Total Problems scale and for the Externalizing Problems and the Internalizing Problems scales. We found that the percentage of Nepali children who scored in the clinical range, i.e. above the American cut-off, was 19.1% for Total Problems. Additional 10.8% children scored in borderline range. The prevalence of internalizing problems (clinical 24.1%; borderline 11.5%) was higher than externalizing problems (clinical 14.2%; borderline 7.4%).

The mean score also known as the magnitude of Total Problems was 29.67 (SD 25.64) with a strong gender effect (F=13.54) with boys scoring significantly higher than girls. Similarly, boys had significantly higher mean scores on Externalizing Problems, as well as on the three subscales: Social Problems, Thought Problems, and Attention Problems. But we did not see significant gender differences in mean scores for the Internalizing problems (Table1)

Table 1: Magnitude of emotional and behavioral problems for boys and girls – Total sample, parent reports

	Boys (N=1914) Mean (SD)	Girls (N=1906) Mean (SD)	Total (N= 3820) Mean (SD)	Gender effect F	Effect size g [a]
Total Problems	31.19 (26.67)	28.14 (24.47)	29.67 (25.64)	13.54 ***	0.11
Externalizing Problems	8.44 (8.52)	6.86 (7.35)	7.65 (7.99)	37.35 ***	0.19
Internalizing Problems	9.01 (8.09)	9.21 (7.96)	9.11 (8.03)	0.57	-0.02
Social Problems	3.50 (3.25)	3.18 (3.02)	3.34 (3.14)	9.92 **	0.10
Thought Problems	2.44 (3.07)	2.11 (2.79)	2.27 (2.94)	12.17 ***	0.11
Attention Problems	4.24 (3.75)	3.52 (3.36)	3.88 (3.58)	38.62 ***	0.20

*P<0.05; **P<0.005; ***P<0.0005; [a]Hedges' g

Among the seven largest caste and ethnic groups of Nepal, the Khas Kaami (the low caste group) scored the highest and the Tharu (ethnic minority group) scored the lowest on all scales when comparing the mean scores on the different problem scales between the seven largest castes and ethnic groups of Nepal (Table 2).

Table 2: Magnitude of emotional and behavioral problems by caste and ethnic group

	Chhetri N =866 Mean (SD)	Brahmin-Hill N = 905 Mean (SD)	Magar N =187 Mean (SD)	Tharu N =246 Mean (SD)	Tamang N = 335 Mean (SD)	Newar N =162 Mean (SD)	Khas Kaami N = 447 Mean (SD)	Group effect F	Partial Eta squared
Total problems	32.67 (27.55)	29.95 (25.23)	27.16 (25.65)	22.53 (23.59)	26.76 (22.21)	28.82 (22.38)	34.15 (28.70)	8.15***	0.015
Externalizing Problems	8.24 (8.55)	7.78 (7.91)	6.48 (7.08)	5.69 (7.07)	6.69 (7.36)	7.82 (7.39)	8.89 (8.77)	6.04***	0.011
Internalizing Problems	10.18 (8.87)	9.15 (7.78)	8.48 (7.98)	7.19 (7.50)	8.04 (6.67)	8.77 (7.25)	10.40 (9.08)	7.59***	0.014
Social Problems	3.71 (3.32)	3.38 (3.06)	3.14 (3.35)	2.50 (2.77)	3.02 (2.99)	3.10 (2.71)	3.77 (3.53)	6.95***	0.013
Thought Problems	2.54 (3.09)	2.24 (2.92)	2.20 (3.04)	1.58 (2.60)	1.97 (2.44)	2.12 (2.36)	2.80 (3.47)	6.38***	0.012
Attention Problems	4.22 (3.75)	3.92 (3.62)	3.77 (3.70)	3.01 (3.18)	3.66 (3.55)	3.74 (3.32)	4.38 (3.73)	5.11***	0.010

*P<0.05; **P<0.005; ***P<0.00

When comparing the mean scores on the different problem scales between the different geographical regions, higher Internalizing Problems were found in the Mountain region compared to the Tarai and Hill areas. Significant interactions were found between geographic regions and types of living area for the Total Problems scale, as well as for the two broadband scales. In the Mountain and Hill regions, the Problem scale scores were higher in the rural areas, whereas in the Tarai region, the problem scale scores were higher in the urban areas.

Conclusion: The prevalence of EBP in Nepal seems to be higher than the overall prevalence of mental health problems for schoolchildren in Asian countries. However, the prevalence is consistent with findings from school studies in neighboring countries, e.g. China: 19.1% and India: 23.3% . The findings also indicated the significant differences in the magnitude of EBP between genders, different castes and ethnic groups, and different geographical regions and types of living area.

5.2 Paper II

"Family correlates of emotional and behavioral problems in Nepali schoolchildren"

We intended to assess the associations between family variables and internalizing and externalizing behavior problems in Nepali schoolchildren. We included selected family variables: parental education, family structure, migrant working status of parents, mental or physical illness in parents, conflict in family and parental disagreement in child rearing.
Both internalizing and externalizing problems correlated positively with factors such as mental and physical illness in parents, conflicts in the family, parental disagreement in child-rearing, and physical punishment of the child. No correlation was found between parental education level, family structure, migrant worker parents and internalizing and externalizing problems.

On further examining with multiple regression analysis, (Table 3, Table 4) using child age, child gender, and major life events as control variables, the total variance of control variables was R^2=0.037 for Internalizing Problems and R^2 = 0.027. Upon adding other family variables to the model, the total variance increased to R^2=0.087 for Internalizing problems and R^2 = 0.083 for Externalizing Problems. Furthermore, when all the family variables and control variables were added simultaneously, all family variables except for the migrant worker father were

significantly associated with Externalizing problems whereas only parental education level, parental mental and physical illness, and parental disagreement in child-rearing were significantly correlated with Internalizing problems.

The higher problems were reported in children with parents having 9-12 years of education, children living in extended families, children with a mother working abroad, children with parents having mental or physical illnesses , children from family undergoing conflict or children subjected to physical punishment.

Table 3: Multiple regression analysis of associations between family variables and Internalizing Problems

Variables	**F**	**B**	**SE**	**Partial eta squared**
Parental education level (Reference group: 0 years of education/illiterate)	6.774			0.005**
1-8 years of education		1.698	0.430	0.004**
9-12 years of education		1.783	0.448	0.004**
>12 years of education		0.864	0.553	0.001
Family Structure (Reference group: Nuclear family)	3.823			0.002
Single-parent family		-0.219	0.438	0.000
Extended family		0.683	0.271	0.002
Migrant worker mother (Reference group: Non-migrant worker mother)	1.570	1.218	0.972	0.000
Migrant worker father (Reference group: Non-migrant worker father)	0.159	-0.133	0.333	0.000
Parental mental illness (Reference group: No mental illness)	11.305	2.459	0.731	0.003*
Parental physical illness (Reference group: No physical illness)	83.475	2.749	0.301	0.022**

Family conflict (Reference group: Low level of conflict)	18.883			0.010**
High level of conflict		2.198	0.866	0.002
Moderate level of conflict		2.432	0.425	0.009**
Parental disagreement in child-rearing (Reference group: Low level of parental disagreement)	5.819			0.003*
Highly disagree		0.886	0.499	0.001
Somewhat disagree		0.929	0.290	0.003*
Use of physical punishment of a child (Reference group: No frequent use of physical punishment of child)	5.892	1.034	0.426	0.002
R^2 (control variables)	0.037			
R^2 (full model)	0.088			

*p<0.005; **p<0.0005

F=F-test statistic; B=unstandardized regression coefficient; SE=standard error

Table 4. Multiple regression analysis of associations between family factors and Externalizing Problems

Variable	**F**	**B**	**SE**	**Partial eta squared**
Parental education level (Reference group: Illiterate / no education)	5.040			0.004*
1-8 years of education		1.560	0.429	0.003**
9-12 years of education		1.658	0.447	0.004**
>12 years of education		1.365	0.552	0.002
Family structure (Reference group: Extended family)	7.010			0.004*
Single-parent family		-1.601	0.455	0.003**
Nuclear family		-0.670	0.270	0.002

Migrant worker mother (Reference group: Non-migrant worker mother)	9.651	3.013	0.970	0.003*
Migrant worker father (Reference group: Non-migrant worker father)	1.305	-0.380	0.333	0.000
Parental mental illness (Reference group: No mental illness)	11.913	2.519	0.730	0.003*
Parental physical illness (Reference group: No physical illness)	47.468	2.069	0.300	0.012**
Family conflict (Reference group: Low level of conflict)	17.766			0.009**
High level of conflict		2.671	0.864	0.003*
Moderate level of conflict		2.228	0.424	0.007**
Parental disagreement in child-rearing (Reference group: Low level of parental disagreement)	9.736			0.005**
Highly disagree		1.009	0.498	0.001
Somewhat disagree		1.227	0.289	0.005**
Use of physical punishment of a child (Reference group: No frequent use of physical punishment of child)	37.246	2.593	0.425	0.010**
R^2 (control variables)	0.027			
R^2 (full model)	0.083			

*p<0.005; **p<0.0005

F=F-test statistic; B=unstandardized regression coefficient; SE=standard error

Conclusion:

We found significant associations between child EBP and family variables, such as: parental level of education, family structure, mental- and physical illness in parents, family conflicts, and child-rearing practices with a caveat that the variables included in the study only explained about 8–9% of the total variance in internalizing and externalizing problems with small effect size. Nonetheless, these findings provide new knowledge about the environmental risk factors for child EBPs in Nepal. Knowledge of possible risk factors in the child's family and social environment is paramount in the assessment and treatment of EBPs in children and adolescents.

5.3 Paper III

"Teacher reports on emotional and behavior problems in Nepali schoolchildren: to what extent do they agree with the parent reports?"

The aims of this paper were to examine the prevalence and magnitude of child EBPs, types of problems and effect of gender. Furthermore, we examined the agreement between teacher and parent reports with regard to type of EBP and child gender.

The prevalence of TRF Total Problems in Nepali 6-18-year-olds was estimated to be 16.2 % (12.8% for boys and 19.6% for girls) with additonal 8.5% in borderline scores (6.6 % boys and 10.5% girls). The estimated marginal means and SDs for Total Problem scores of teacher-reported child EBP were 26.9 (24.5). The prevalence of EBPs reported by teachers was found to be 15.4% which is lower than the previous parent reported prevalence of 19.1%. Significant mean differences between the genders were found for all scales except for Internalizing Problems, Somatic Complaints, and Withdrawn/Depressed. Boys scored significantly higher than girls on the Total Problems scale. While comparing the 90 common items between the TRF and CBCL, the mean score of TRF was significantly lower than that of the CBCL.

Using Pearson correlation analysis, a moderate positive correlation was found between the parent and teacher scores on child EBPs. The largest correlation was found for Attention Problems and Externalizing Problems. Agreement between the parent and teacher scores was higher for Externalizing Problems than for Internalizing Problems (Table 5). The table also shows the effect of gender on parent-teacher agreement. We found a significant gender effect only for Internalizing Problems ($z=-2.87$; $p=0.004$), with a higher agreement for girls than for boys. No gender effects were found for either of the syndrome scales. All correlation differences between genders were small, with effect sizes $q<0.10$.

Table 5. Agreement between teacher reports (TRF) and parent reports (CBCL) and the effect of gender – Total sample

Scales	Pearson's correlation	Agreement for boys	Agreement for girls	Z test[#]	Effect size q[a]
Total Problems	0.38 **	0.36	0.40	–1.16	0.04
Externalizing Problems	0.37 **	0.37	0.35	0.83	0.03
Internalizing Problems	0.34 **	0.30	0.38	–2.87**	0.09
Aggressive behavior	0.33 **	0.33	0.31	0.65	0.02
Rule-Breaking behavior	0.36 **	0.37	0.30	2.45	0.08
Attention Problems	0.37 **	0.35	0.39	–1.52	0.05
Thought Problems	0.29 **	0.27	0.31	–1.24	0.04
Social Problems	0.26 **	0.25	0.26	–0.40	0.01
Somatic Problems	0.33 **	0.31	0.36	–1.49	0.05
Withdrawn depressed	0.28 **	0.25	0.32	–2.22	0.07
Anxious depressed	0.28 **	0.24	0.31	–2.44	0.08

*P<0.05; **P<0.005; ***P<0.0005

Conclusion: The present study provides more knowledge of child EBPs in Nepal as reported by teachers and shows how child problems might vary in the school and home contexts. Our findings suggest that it is important to incorporate various sources of information, such as parents and teachers, when assessing mental health problems in children and adolescents.

6 Discussion

From the existing literature presented in this thesis, we have learned that the prevalence of child and adolescent EBP in LMICs is lacking. Our study helps to fill in this gap. The few studies done in LMICs have found that the prevalence may be as high as in the HICs. Our findings from Nepal showed that both the prevalence and the magnitude of problems (i.e., mean problems) were in the high to middle range compared to other international studies. Furthermore, the existing literature from LMICs on the association between environmental factors and child EBP is limited. The thesis contributes to the knowledge by showing how various correlates of EBP, such as living area and various family factors, associated with child EBP in Nepal. Finally, the thesis includes a study on the agreement in ratings of child EBP between teachers and parents. We found several discrepancies between parent and teacher ratings on child EBP, which demonstrate the importance of gathering information from different sources when assessing child problems in LMICs as well as in HICs.

6.1 EBP in children and adolescents in a Nepali context

The prevalence of EBPs based on the parent rating was 19.1% and the prevalence of EBPs based on the teacher ratings was 15.4 %. Also, the mean TRF_{90} score of Total Problems was lower than the CBCL $_{90}$ score which is consistent with findings from other international studies (Huang 2017; Rescorla et al., 2014). Compared to the overall prevalence of mental health problems among schoolchildren in Asian countries as reported in an earlier review (Srinath et al., 2010), the prevalence of EBPs in Nepal may seem somewhat high. The higher prevalence in a country like Nepal might be due to traumatic childhood experiences caused by several environmental and cultural factors impacting families, e.g., natural disasters, poverty, early pregnancies, deficiencies in the psychosocial and educational environment, and gender disparity (Ghimire et al., 2015; Save the children; International labour organization; UNICEF 2017). However, risk factors outside the family were not within the scope of the present study. Another reason, other than environmental factors, might be that informants in this part of the world might have a different threshold for reporting child EBPs due to cultural norms.

An interesting finding in our study was that, in contrast to children in many Western countries, Nepali children had higher rates of internalizing problems than externalizing problems. We do not know the reason for the higher internalizing problems in our study and more studies are warranted to explore possible cultural reasons. The reason might be due to elevated levels of

somatic complaints. Somatic complaints may be a Nepali child's way of expressing problems rather than acting them out. In a country like Nepal, where there is very little awareness about mental health problems, especially in children, parents and teachers may tend to pay more attention to a child's physical symptoms than their conduct and may define problems accordingly. This would be in accordance with findings from other developing countries like Kenya (Magai et al., 2018). It is also possible that the high internalizing scores are related to special risk factors like natural disasters (Ghimire et al., 2015; Save the children; International labour organization; UNICEF 2017) In April 2015, Nepal was hit by a major earthquake, which affected millions of people and destroyed or damaged nearly a million homes. It may be that child anxiety and depression increased in the population because of this traumatic event and what followed in its wake. Finally, the high internalizing problems may be due to stressful living conditions, as these may lead to an elevated level of parental stress, which may in turn affects how parents rate their children. In particular, internalizing problems may prevail over time (Chung et al., 2013; Stone et al., 2016).

In addition, Nepali children, like children from other South Asian countries, are socialized to control their frustrations and negative emotions, i.e. to internalize problems (Cole, 2002). Studies have shown significant cross-cultural variations in the relative dominance of internalizing versus externalizing problems world-wide (Crinjen et al., 1997; Weisz et al., 1993). Due to different cultural norms, the types of problems that children expose will differ. In countries where the culture discourages child aggression and other uncontrolled behaviors, internalizing problems like shyness, anxiety and depression are noted more often; whereas, in cultures that accept acting out of emotions, externalizing behaviors are noted more often (Crinjen et al., 1997). For instance, cross-cultural studies have shown that African and Thai children exhibit more internalizing behavior while Caucasian American children exhibit more externalizing behavior, suggesting cultural factors influencing children's manifestations of EBP (Weisz et al., 1993).

6.1.1 Gender differences

In our study, we found a higher magnitude of Total Problems in boys than in girls, as reported both by parents and teachers. According to both parent and teacher reports, boys scored higher than girls on Externalizing Problems, Social Problems, Thought Problems, and Attention problems, which is in accordance with other international studies (Rescorla et al., 2007;

Rescorla et al., 2014). This is also in line with findings from another Nepali study conducted by Ojha et al (Ojha et al., 2013). The gender differences in EBPs could be due to the difference in how these two genders are treated in the home and community based on the cultural norms. Our findings converge with findings from other international studies, which have reported similar gender differences (Ginige et al., 2014; Rescorla et al., 2007; Qu et al., 2015). Nevertheless, more studies are warranted to explore gender differences in child EBPs across cultures, including in Nepal.

6.1.2 Differences between castes and ethnic groups

To examine between-group differences in the Nepali population, we compared child EBPs across the seven largest castes and ethnic groups (Nepal Census 2011). Children in the Khas Kaami group, who mostly inhabit the Middle Hills region, had the highest prevalence of EBPs. This finding is in line with previous Nepali studies, which suggested that children belonging to the lowest caste had more mental health problems (Adhikari et al., 2015; Mahat, 2007). In Nepal, experiences of caste-based discrimination have been found to be prevalent among the Dalits (Pariyar & Lovett, 2016).

In contrast, the Tharu, who mostly live in small villages in the Tarai region, showed the lowest level of EBPs. One possible explanation for the lower scores for this tribal, indigenous group, may be that it has some strong protective factors, both at the individual-, family-, and social level. The Tharu are known for their strong personal integrity and loyalty to family and social values. Their families live close to one another, often as extended families within the same household (https://en.wikipedia.org). Internationally, a supportive social network has been found to be a crucial factor for psychosocial well-being (Wille et al., 2008). Lower problem scores among Tharu parents may also be due to inadequate language competency. Although the Tharu understand the Nepali language, they speak their own Tharu languages. Understanding the conceptual equivalence of some of the CBCL questions might have been difficult for them, and therefore they might not have reported any problems. Moreover, parent ratings on child EBPs may differ across ethnic groups, due to differences in cultural norms and attitudes towards reporting problems (Javo et al., 2000). Thus, in some cultures, child EBPs might be underreported by parents, and this might be the case of the indigenous Tharu as well.

6.2 Environmental associates of child EBP

6.2.1 EBP in different living areas and geographical regions

We found that child EBPs in rural and urban areas interacted with geographical regions. In the Mountain and Middle Hills regions, children from rural areas had the highest problem scores; whereas, in the Tarai region, children living in the rural areas scored the lowest. The reason for the higher problem scores in the rural areas of these regions may be tougher living conditions. Indeed, families living in the Middle Hills and Tarai regions have little access to modern services, such as transportation, educational institutions, health services, and recreational activities. Further, the socioeconomic status is poor in rural areas (Nepal Census 2011). Our findings are consistent with the earlier study done by Mahat (Mahat, 2007), which reported higher problem scores in rural areas. Our findings also converge with a qualitative study done in Nepal (Adhikari et al., 2015), which suggested that children from the Mountain region who belonged to poor households experienced more psychosocial problems. However, a study done in 2015 on self-reported EPBs among adolescents in the Western Developmental region of Nepal found a lower prevalence of EBPs in the rural than in the urban areas (Karki et al., 2015).

Our finding of a higher amount of EBPs in the urban areas of the Tarai region could be due to the migration of families from rural areas to cities in search of better working opportunities, as some children might have problems adjusting to a new environment. Similar results of higher problem scores for children in urban areas have been reported in other international studies, suggesting that this might be due to increased environmental and family risk factors, such as crime and violence, discrimination, family divorce, and economic inequality (Shahini et al., 2015). However, in other international studies, mental health problems in children did not seem to be influenced by type of living area (Howell & McFeeters, 2008). Hence, more studies are needed both in Nepal and worldwide to explore the rural/urban differences in child EBPs.

6.2.2 Family associates

We found a significant association between family structure and child internalizing and externalizing problems. Extended family structure was associated with more child problems compared to a single parent- or nuclear family structure. Our finding is consistent with a recent American study where children living in extended family households had more behavior problems (Kang et al., 2017). Another American study found that several dimensions of

children's well-being suffer when exposed to crowded living conditions, even after controlling for socioeconomic status (Solari & Mare, 2012). Most research on family structure has been done in Western HICs. However, children's living arrangements differ according to cultural- and economic context. It raises important questions about how and why family structure is related to child outcomes in different parts of the world. In LMICs, children often live in multigenerational households with grandparents, aunts, uncles, and other relatives, collectively referred to as "extended family". There is a lack of studies on the association between family structure and child EBP in LMICs, including in Nepal. The correlation between extended family structure and child EBP that was found in the present study, may be due to a number of reasons. We may speculate that stressful relations between mothers and extended family members may harm children's emotional development. Another reason could be that extended family households often include elderly or sick members who require care and attention by the parents. This may lead to decreased interactions between parents and children and thereby to a negative impact on child behavioral adjustment and psychological health. More studies are warranted to explore further the correlation between family context and child EBP in a country like Nepal.

We did not find any significant association between young motherhood and child EBP. However, other studies from around the world have shown that young motherhood may be associated with negative child outcomes in terms of cognitive development, emotional well-being, behavioral problems, and engagement in risky behaviors (Francesconi, 2008; Hofferth & Reid, 2002; Levine, Pollack, & Comfort, 2001; Reid et al., 2007). It is argued that young mothers have a lower maturity level and are emotionally unprepared for parenthood. Besides, these mothers tend to have lower education owing to early childbearing, which in turn may lead to residential instability, employment instability, and lower earnings (Duncan et al., 2018). However, studies on the impact of young motherhood on children's mental health are limited in LMICs countries like Nepal, and we do not know what effect the specific environmental conditions of young mothers in such countries might have on child behavior. For instance, it may be that young mothers in Nepal often live with their parents who take an active part in child-rearing and also provide financial as well as emotional support. If so, this might unweight the different negative effects mentioned above.

Globally, there are around 272 million international migrants with the largest proportion coming from Asia (41%) (World Migration report, 2020). An estimated 3.5 million Nepali are

working abroad, primarily in India, Malaysia, and the Middle East (Ministry of Labour, Nepal). While many families have benefited from the money the migrants have earned, it has resulted in family separation, affected child-rearing and fragmented the emotional- and other support within the family (Simkhada 2017). The psychological and emotional stress among left-behind children may have a negative impact on their psychosocial development, as reported by various studies (e.g., Fellmeth et al, 2018; Hu, 2014; Wu 2015). In our study, we found that migrant worker mother status was positively associated with child Externalizing Problems. However, no association was found for migrant worker fathers. A recent review study reported that the impact of parental migration on left behind children is not purely negative (Antia et al., 2020). Some South-East Asian countries showed negative effects of parental migration (Senaratne et al., 2011; Wickramage et al., 2015), whereas in other countries, left behind children were better off than non-left behind children (Adhikari et al., 2013; Asis et al, 2006). Perhaps, some unknown, resilience factors may have played a role, such as strong family- and social support mechanisms. Maybe the increased family socio-economic status (SES) outweighed the negative impact of a migrant-worker parent. It might also be that migrant-worker parents did in fact have a negative impact on child well-being, yet the impact might have been too weak to affect the parents' ratings of child EBP.

We found a significant association between parental mental illness and child internalizing and externalizing behavioral problems. These results are consistent with previous findings that parental mental illness negatively influences child EBP (Breaux et al., 2013; Cummings et al., 2005; Papp et al., 2005). One possible explanation may be that mental illness in parents can lead to relationship discord between parent and child, poor general parenting skills, social isolation of family, and poverty. Such family environment can place children at much greater risk of impaired social, psychological and physical health than other children (Mathai et al., 2008). Another explanation may be the reciprocal relationship between parent's behaviors and child behaviors. It is conceivable that children who consistently observe internalizing behaviors (sitting alone, crying) and externalizing behaviors (yelling, shouting, hitting) are more likely to imitate these behaviors than children who have never observed these kinds of behaviors (Bakers et al., 2019; Whiteside-Mansell, Bradley, & McKelvey, 2009). Finally, there may be a genetic link between parent and child psychopathology (Dean et al., 2010; Gottesman et al., 2010). However, an examination of such possible connections was not part of the present study.

Similarly, our study showed a positive correlation between child internalizing and externalizing problems and chronic physical illness in parents. This finding is in accordance with previous studies (Evans, Keenan, & Shipton, 2007; Osborn, 2007). One possible explanation may be the disruption of parenting due to lack of energy and stamina, or inability to provide adequate attention to the child due to their physical health issues (Mukherjee, Sloper & Lewin, 2002). However, the relationship is not fully understood. Different illnesses are believed to affect families in different ways, and different kinds of adaptive behaviors may be required. Limited research in this area has resulted in inconclusive results as to how the patterns of parental physical illness are associated with children's outcomes (Chen, 2017).

Further, we found a significant association between conflicts in the family causing a high level of stress, and child EBP. Our finding is in line with other, previous studies which showed that conflicts in the family, particularly between parents, is a significant risk factor for the development of psychopathology in children, regardless of family structure (Cummings, George, McCoy, & Davies, 2012; Harold et al., 2018). Generally, the effect of parent conflict on children is explained by the extent to which one or more aspects of emotional security are negatively affected and the extent to which children are able to regulate general emotional distress (Cummings & Davies, 2010; Davies, Martin, Sturge-Apple, Ripple, & Cicchetti, 2016). There are several potential mechanisms through which conflicts in a family with a high level of stress might influence the occurrence of child EBP. For example, children's feeling of emotional reactivity may be affected in the context of a conflict, and conflicts between parents might affect the parent-child relationship (Cummings & Davies, 2010).

Our study found a significant correlation between parental disagreement on child-rearing and child externalizing and internalizing problems. Our study also suggested that there may be a positive correlation between the practice of physical punishment and child EBP. Similar findings have been reported by several studies around the world. A comprehensive review of both US based- and international studies found that spanking by parents was associated with children's EBP, including both internalizing and externalizing problem behaviors (Gershoff & Grogan-Kaylor, 2016). In another meta-analysis from a sample of 292 middle-class families with 8-12 years-old children from several countries (China, India, Italy, Kenya, Philippines, and Thailand), it was found that physical punishment, which included spanking, slapping, grabbing, shaking, and beating up, was associated with adverse child outcomes, especially in

countries in which physical punishment was less culturally normative (Lansford et al., 2005). This is critical given that physical punishment of children is a common phenomenon in Nepal, especially among children 3-5 years and children from the lower castes and from indigenous groups (Dalit and Janajati) (Kandel et al., 2016).

6.3 Parent – teacher agreement on child EBP

This is the first study in Nepal to assess parent-teacher agreement on child EBP. We used the CBCL and the TRF as instruments. Our study indicated that parent-teacher agreement on EBP among Nepali schoolchildren was moderate to low, and comparable with other international studies (e.g. Gross et al., 2004; Huang, 2017; Rescorla et al., 2014; Salbach-Andrae et al., 2009; Satake et al., 2003; Winsler & Wallace, 2002). As indicated by Rescorla and colleagues, possible reasons for low to moderate cross - informant correlations might be large class size, low parental engagement in the school, and low parent-teacher interaction. They found that large class size was most associated with lower parent–teacher agreement. Largest classes having forty children in a class tended to have low agreement between informants, whereas the smallest class sizes (15-25) had the highest agreement (Rescorla et al., 2014). One of the biggest problems with Nepal's education system is large class sizes. Classes of 40-50 students are not uncommon for government schools. The average teacher - student ratio for primary schools is 1:22 and for secondary school is 1:24 (MOE, 2017).

Regarding the effect of child gender on the parent – teacher agreement, we found a gender effect on cross-informant correlation only for internalizing problems, where the correlation was higher for girls than for boys. Internalizing problems are more common in girls and such problems may be exhibited more consistently in the home- and school contexts (Karin, 2020). This might be the reason for the higher parent-teacher agreement on Internalizing Problems for girls (Deng, 2004; Rescorla, 2014). However, this finding contrasts some other studies which found that child's gender only affected the ratings of externalizing problems (Cheng et al, 2018; Satake, 2003). It should be noted that cultural factors may impact the inter-rater agreement on EBP in girls and boys differently (Karin, 2020, Javo et al., 2009, Liu, 2001). Therefore, more studies regarding the effect of children's gender on cross-informant correlations are warranted in different countries.

Consistent with previous studies, our study demonstrated that the parent-teacher agreement was higher for Externalizing Problems than for Internalizing Problems (Deng, 2004; Satake, 2003).

Internalizing problems are difficult to for teachers to recognize and are more likely to be observed by parents. This may be the reason why Nepali parents reported more internalizing problems than teachers, resulting in lower agreement on these problems. Our study showed the highest parent-teacher agreement on Attention Problems. The reason might be that attention problems are the most prevalent EBPs in schoolchildren and are easily recognized both by parents and teachers. Both Nepali parents and teachers strongly emphasize children's academic achievement; therefore, it is not surprising that they are both more aware of academic-related problems like attention problems.

6.4 Limitations of the study

There are some methodological limitations of the study. One limitation is that we used the American norms for the CBCL and the TRF as cut-offs, as Nepali norms for these instruments are still lacking. This may have affected the accuracy of differences in prevalence between externalizing and internalizing problems and between the two genders. Although the selection of children in each school was random, the purposive selection of the 16 districts and the 64 schools could be a source of selection bias. Hence, we cannot claim that the results are representative of the whole country. Further, the number of participants in some of the castes and ethnic groups was small, which might have affected the results, making them less reliable. Hence, more studies with larger samples are recommended for those groups in order to confirm the findings.

The instruments that we used were in the Nepali language. Although everyone in Nepal speaks Nepali, the indigenous ethnic groups in our study have their own languages, so language and cultural barriers might have affected the understanding and conception of certain words and meanings for some of the participants. If so, we do not know in what way this might have affected the results.

Another limitation of the study was that this was a cross-sectional study and not a longitudinal study. Hence, we could not provide insight into cause-and-effect relationships. Further, the broad design of our study did not allow us to examine the different mechanisms of the associations between family factors and child EBP in more detail. The small effect sizes in the study indicate that in addition to the family variables we investigated, other environmental and child variables might be important to add to the model. It would have been helpful if we had included other potential risk factors for children's EBP, such as domestic violence, child

neglect, and parental substance abuse, as well as environmental factors outside the family. However, the scope of this study did not include the examination of other socio-cultural factors that might have impacted the results. Moreover, the control variables (child age, child gender, and major life events) included in the study were few. A more complete set of covariates would have given more accurate results and a more precise assessment of the family correlates that were used.

Some of the variables that were used as correlates might not have been precise enough to accurately measure the specific topics under investigation. For some variables, additional questions might have been posed to create more valid constructs. For instance, we lacked data on the onset, course, and outcome of parental illness. Limited research data in this area have resulted in inconclusive results regarding how patterns of parental illness are associated with child outcomes (Chen, 2017). As for the family structure variable, adding questions on whether additional help was provided for single mothers by other family members, and questions about the additional presence of elderly family members in poor health requiring extra assistance, might have increased the validity of the variable. Finally, the prevalence of some of the dichotomous variables was low, which weakens the power of these variables to establish associations. This methodological limitation might have affected some of the results.

As parents' reports were the sole source of background information, it is likely that our data had some reporting bias. For instance, parent information about family factors may have reflected the extent to which parents were aware of socially acceptable family functioning and child-rearing. Use of complementary methods to obtain background information, such as including teachers and children themselves as informants, as well as using qualitative data from parents and children, would have enriched and strengthened the validity of the results.

Our data was collected from teachers and parents only, and not from the children themselves. It is widely acknowledged that children are the key informants and experts on their own lives, and their opinion should be asked when assessing their mental health needs (Casas, 2019). Youths' self-reports of EBPs might have broadened our understanding and might have identified more children who struggle with their emotions or behaviors. Also, fathers' reports were not assessed. Generally, fathers who are substantively involved in their children's lives may provide valuable information about their children's emotional and behavioral problems (Jansen et al., 2017; Magai, 2018).

Finally, our data was informant data. Additional data from direct observation would have granted us more certainty to determine whether the teacher-parent discrepancies reflected true differences in child behavior between school and home. Further, if family function/dysfunction had been objectively measured by direct observations, it could have resulted in a more predictive measure. However, it would have be difficult to obtain an objective, high-quality measurement of family function/dysfunction in such a large sample, and it would have required a very large amount of resources.

6.5 Clinical implications

This study provides new knowledge about the prevalence, magnitude, family risk factors, and cross-informant agreement of child EBPs in Nepal, which may have implications for both clinical and preventive mental health work. In child psychiatric work, information about the child from multiple informants, knowledge about possible risk factors in the child's family, and the importance of integrating such knowledge in the assessment and treatment of the child, is paramount for problem-solving. Hence, clinicians should collect information about the child's functioning from different informants and in different contexts. Clinicians should also routinely ask about family environment when trying to understand or assist children with internalizing or externalizing behavior problems. Although genetic and biological factors may also play a vital role in child EBPs, the present study demonstrates that environmental factors might be equally important.

7 Conclusions and future research

Our study examined the prevalence of EBPs in Nepali schoolchildren of different castes and ethnic groups. Between-group differences were found, highlighting the importance of taking cross-cultural differences in child EBPs into account. Further, our findings demonstrate the importance of including within-country differences, such as different geographical regions and urban/rural areas. Like other countries, child EBPs in Nepal were associated with several family risk factors. A positive correlation was found for factors such as extended family structure, parental psychopathology, physical illness in parents, elevated level of conflict in the family, parental disagreement in child-rearing, and harsh child-rearing methods like physical punishment. The present study provides new knowledge of child EBPs in Nepal as reported by both parents and teachers and shows how child problems might vary in the school and home contexts.

Our data can be subsequently used for implementation of a child mental health policy to improve the mental health status of children in Nepal. Our study may provide a knowledge base for strategies focusing on prevention and intervention programs.

This thesis may be used as a springboard for future empirical studies in Nepal, which should be designed to examine in more details the different contextual risks and protective factors impacting child EBPs. This will help identify vulnerable groups of children, including children from lower castes, which will be essential for the prevention of child mental health problems. In particular, other environmental risk factors for child EBPs that were not included in the present study, should be investigated in future studies. Further, future longitudinal studies of child EBPs may provide insight into cause-and-effect relationships. Finally, information on EBPs taken from children and adolescents themselves is lacking and is therefore highly recommended for future studies.

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PAPERS AND APPENDICES

PLOS ONE

RESEARCH ARTICLE

Parent reports of children's emotional and behavioral problems in a low- and middle-income country (LMIC): An epidemiological study of Nepali schoolchildren

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Abstract

Background

As epidemiological data on child mental health in low- and middle-income countries are limited, a large-scale survey was undertaken to estimate the prevalence and amount of child emotional and behavioral problems (EBP) in Nepal as reported by the parents.

Methods

3820 schoolchildren aged 6–18 years were selected from 16 districts of the three geographical regions of Nepal, including rural, semi-urban and urban areas. We used the Nepali version of the Child Behavior Checklist (CBCL)/6-18 years as screening instrument. Comparisons of child problems between genders and between the seven largest castes and ethnic groups were carried out by analysis of variance. Prevalence was computed based on American norms.

Results

Adjusted prevalence of Total Problems was 18.3% (boys: 19.1%; girls:17.6%). The prevalence of internalizing problems was higher than externalizing problems. The mean scores of Total, Externalizing, and Internalizing problems were 29.7 (SD 25.6), 7.7 (SD 8.0), and 9.1 (SD 8.1), respectively. The Khas Kaami (Dalit) group scored the highest, and the indigenous Tharu group scored the lowest on all scales. In the Mountains and Middle Hills regions, problem scores were higher in the rural areas, whereas in the Tarai region, they were higher in the urban areas.

necessary to replicate our study findings, uploaded as a "Supporting information file".

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Conclusion

The prevalence and magnitude of emotional and behavioral problems in Nepali children were found to be high compared to findings in meta-analyses worldwide. Problem scores varied according to gender, castes /ethnic groups, and living areas. Our findings highlight the need for a stronger focus on child mental problems in a low-and middle-income country like Nepal.

Introduction

One third of the world's population are children, with the vast majority living in low- and middle-income countries (LMIC) [1]. Many mental disorders start during childhood and adolescence [2, 3]. Early psychiatric disorders may have a huge effect on children's lives and on the functioning of their families [4]. Several studies have pointed to early identification and treatment of these disorders as key factors for improved prognosis [5]. However, in many LMICs, mental health conditions and disabilities in children have largely gone unrecognized, and early interventions and appropriate service designs for child mental health problems are lacking. [3, 6, 7]. Epidemiological studies may enable the assessment of service needs in LMICs as well as the identification of high-risk groups needing special attention.

A recent review on the global coverage of prevalence data for mental disorders in children aged 5–17 years reported that most of the LMICs had no data on any kind of mental disorders. It further reported that many LMICs were poorly represented in the available data; for example, no region in sub-Saharan Africa had more than 2% coverage for any disorder [8]. Although sparse, previous research in LMICs suggests that child and adolescent mental health problems are common. A systematic review in non-referred samples from LMICs showed a prevalence of about 10–20% in most of the 16 surveys, which is consistent with findings from high income countries (HIC) [3].

A former meta-analysis of 51 Asian countries reported a general prevalence of 10–20% [9]. In the South Asian countries, studies on child mental health are sparse and their quality varies. In India, a review study involving both school-based and community-based studies, reported a prevalence of 23.3% in the school-based studies and 6.5% in the community-based studies. The discrepancy was probably due to several methodological and sample factors in the latter studies [10]. In a systematic review from Bangladesh, the prevalence of mental disorders was found to range from 13.4% to 22.9% among children aged 2–16 [11]. In Pakistan, a study among school children aged 6–16 reported a prevalence of 15.9% of behavior problems and 22.5% of emotional problems [12]. In another LMIC country, Iran, a community-based study of children aged 6–17 reported a prevalence rate of 16.7% of total difficulties [13]. In China, a recent, large-scale epidemiological study in the Sichuan Province reported an overall prevalence of 19.1% of child mental disorders [14].

For Nepal, we do not know the prevalence or magnitude of emotional and behavioral problems (EBP) in the child population as no larger studies have been published internationally. However, an unpublished Nepali PhD dissertation from 2007 on teacher-reported problems of children aged 6–18, using the Children's Behavior Questionnaire (CBQ) as screening instrument, suggested a prevalence rate of 24.5% [15]. Recently, a pilot study of a national mental health survey for Nepal was carried out which included adults and adolescents aged 13–17 years [16]. Using a diagnostic instrument (Mini International Neuropsychiatric Interview-MINI), the prevalence of mental disorders in this age group was found to be 11.2%. However,

broader and more robust survey studies of EBP in Nepali child population comprising several age groups are warranted in order to fill the knowledge gap [17]. The present study is the first large-scale survey of child EBP in a broader age group (6–18 years) that is published internationally.

Although epidemiological studies have consistently identified different types of emotional and behavioral problems for boys and girls [18] there has been little research examining gender differences in child EBP in LMICs, including Nepal [19]. Most of the studies done in Nepal suggest higher rates of behavior problems in boys than in girls with boys having more externalizing problems and girls having more internalizing problems [15, 20, 21]. However, a broader, nationwide sample comprising children of all age groups is needed to confirm these findings.

It should be noted that in many LMICs, the population is multi-ethnic. Internationally, cross-cultural studies have shown that different cultural contexts might play a role in the prevalence and types of child mental problems as culture both defines and creates specific sources of distress [3, 22]. In cross-cultural studies, parents' interpretation and rating of child problems have been shown to differ across cultures, resulting in differences in the prevalence of child mental health problems [23, 24]. A large, cross-cultural study from 45 societies nested within 10 culture clusters reported that society plus culture cluster accounted for about 10% of the variance in parents' ratings of children's problems [25]. Although other factors than culture may play a more important role in ratings of child EBP than society and culture, culture's influence on parents' ratings of child problems are still important to investigate, particularly for the planning of child psychiatric services and for clinical interventions, especially so in the less investigated LMICs. In the present study, we therefore decided to explore possible within-country cultural differences by comparing EBP between the seven largest castes and ethnic groups.

As Nepal is a highly heterogeneous country not only culturally but also when it comes to geography/ ecology and types of living areas, we decided to compare the magnitude of EBP between the main geographic/ecological regions of the country and between the different types of settlements / living areas (rural, semi-urban and urban). By including within-country diversity in our study, we were able to capture a more nuanced picture of the distribution of EBP in the general Nepali child population. Living conditions in the geographic regions of Nepal differ, being harsher in the Mountains region [26], which might influence child mental health. Hence, assessing and comparing the magnitude child EBP between the three main regions of Nepal might be of interest to the authorities in their planning of mental health services. Internationally, several studies have demonstrated that types of living areas might have an impact on child mental health problems [20, 27, 28], but till date, no nationwide study in Nepal has examined and compared child EBP between different types of living areas.

The specific aims of the present study were to assess the prevalence and magnitude (mean scores) of parent reported EBP in Nepali school children aged 6–18. To examine within-country diversity, we compared child problems between a) castes/ethnic groups, b) geographic regions, and c) types of living area. Finally, we looked for gender differences in EBP.

Materials and methods

Study site and population

Nepal has a population of 29.6 million people (2021) and is topographically divided into three regions: The Himalaya (Mountain Region) to the North, the Middle Hills region, and the Tarai (the Southern flatland). There are 16 districts in the Mountain Region, 39 districts in the Middle Hills and 20 districts in the Tarai region. According to the Nepali demographic-social census [26], children below 18 years of age represent 44.4% of the total population: 22.5% boys

and 21.9% girls. There are 126 different castes and ethnic groups. The term "caste" basically refers to a group of people who follows Hinduism. Traditionally, Hindu castes are ranked hierarchically in the following order of social status: (1) Brahmins (highest class), (2) Chhetri, (3) Vaishya, and (4) Sudra, also called Dalit (lowest class). The other ethnic groups in Nepal are indigenous nationalities and tribes, known collectively as the Janajati / Adivasi group. They have their own traditional cultures and specific languages, and do not necessarily adhere to, or fall under the Hindu caste system. According to the census [26], the seven largest castes and ethnic groups are: Chhetri 16.6%, followed by Brahmin-Hill 12.2%, Magar 7.1%, Tharu 6.6%, Tamang 5.8%, Newar 5%, and Khas Kaami (the largest group of Dalits) 4.8% [26]. The Magar, Tharu, Tamang, and Newar all belong to the Janajati/Adivasi indigenous group.

Study design

The present study is a cross-sectional, cross-cultural epidemiological study in the general child population of Nepal.

Subjects and procedure

Sampling method. Based on the population distribution of the three main ecological/geographic regions of Nepal (i.e. 8% of the total population in the Mountain region, 45% in the Middle Hills region, and 48% in the Tarai region), we purposively selected three districts from the Mountain region, and six districts each from the Middle Hills and the Tarai regions. As our study includes an examination of child problems in different castes and ethnic groups, we wanted to ensure a high number of participants in each of these groups. Hence, Kathmandu district was added to the sample because of its multi-cultural population. In all, 16 districts were purposively selected from all over the country. Next, we purposively selected four schools in each district (two government schools and two private schools) based on accessibility and feasibility–i.e. a total of 64 schools in the 16 districts. Our study is a large, countrywide study and required an extensive amount of time and money to accomplish. The purposive sampling technique was chosen for cost effectiveness and for ease of data collection and travels. Students from grades 1 to 10 with six students in each grade (three boys and three girls), were then randomly selected using random number tables. Thus, in each district, 240 children were selected, which gave a total of 3840 children.

Procedure. All schoolchildren aged 6–18 were eligible for this general population study, irrespective of their caste and ethnic background. In Nepal, children from all castes, religions and ethnic groups are admitted to the regular schools. Hence, recruiting parents through the regular school system would provide a reasonable cross-section of the child population. Only regular schools were included (i.e. both governmental and private schools), whereas the very few special education schools for children with severe disabilities and faith-based schools representing minor, more segregated groups were excluded. Children's caste and ethnic belongings were classified according to their parents' own definition.

Twenty research assistants (RA) with a bachelor's degree in education / psychology collected the data, and seven supervisors with a master's degree in education or in psychology and experience in data collection work supervised them. Before commencing their work, they all followed an intensive three days' training program administered and led by the researcher (first author) which included orientation about the research project and the instruments, their own role and responsibilities in the project, and a thorough training in how to inform parents and teachers, how to answer queries that might arise, and how to assist in filling in the forms of illiterate parents. Data collection work was monitored by the researcher (first author) by means of frequent telephone check-ups, SKYPE meetings, and by direct visits to the different

districts. A meeting with the school management was conducted at each school and a written consent was obtained. An invitation letter was then sent to the parents, and both oral and written information was provided. Informed consent was obtained from all participating parents. Only mothers were used as informants. Fathers were not included due to capacity problems. For illiterate parents, the research assistants verbally posed the questions to them and helped fill in the forms. Data were collected during September 2017 –January 2018. Plotting of data was done manually during the first half of 2018 by three research assistants, supervised and monitored by the researcher. The overall participation rate was 99.5%. The proportion of missing items was not more than 0.1% for any of the CBCL items.

Measures. Based on separate focus group conversations among teachers, parents and professionals about which screening tool would be the most appropriate for Nepal: the Achenbach System of Empirically Based Assessment (ASEBA) / Child Behavior Checklist (CBCL)/6-18 [29] or the Strength and Difficulties Questionnaire (SDQ 4–17) [30], we concluded that the ASEBA instruments would be the better instruments to use (i.e. for detecting problems, for clear and simple questions, and for higher cultural sensitivity).

1. Child Behavior Checklist (CBCL/6-18). The CBCL has been translated to more than 100 languages and has established good psychometric properties across the world, including good criterion-related validity, good test-retest reliability, and good internal consistency as measured by Cronbach's alpha [29]. It consists of 20 competence items and 113 problem items. The problem items are scored on eight syndrome scales, two broad-band subscales: Internalizing and Externalizing, and a Total Problems scale. The syndrome scales: Withdrawn/Depressed, Somatic Complaints and Anxious/Depressed together form the "Internalizing" scale and the scales: Rule-breaking Behavior and Aggressive Behavior together form the "Externalizing" scale. The Social Problems, Attention Problems and Thought Problems scales do not belong to either subscales but are included in the Total Problems scale, which is derived by summing up the individual item scores. The response format of questions on behaviors is: 0 = not true, 1 = somewhat or sometimes true, and 2 = very true or often true.

We used the Nepali version of the Child Behavior Checklist (CBCL)/6-18 that had been translated into Nepali in connection with a former Nepali study [15]. The teacher version (TRF) and the youth version (YSR) of the ASEBA instruments had both been validated and found acceptable for use in Nepal as reported in other studies [15, 20], whereas the parent version (CBCL) had not been validated in Nepali studies before. In our study, we found an acceptable internal consistency for the parent version (CBCL) as indicated by Cronbach's alphas for the eight syndrome scales: Withdrawn / Depressed: 0.71; Somatic Complaints: 0.79; Anxious / Depressed: 0.76; Rule-breaking Behavior: 0.76; Aggressive Behavior: 0.88; Social Problems: 0.73; Attention Problems: 0.80; Thought Problems: 0.75.

2. Background information questionnaire. The parents were asked to fill in a questionnaire asking about various background information data. In the present paper, we present the following selected variables: child gender, caste / ethnicity of the child, ecological / geographic region, types of living area, types of school, parents' occupation, and parents' educational level.

Statistical analyses. The ASEBA data management and SPSS statistics version 22.0 for Windows were used for all analyses. When computing the overall prevalence for Nepal, sampling weights were used to account for the oversampling for some regions and age-groups (i.e. according to the Nepal Census, 2011) [26]. We used Pearson's chi square test for comparisons between groups on categorical variables. To assess group differences for continuous variables, analysis of variance (ANOVA) was done. For group comparisons involving more than three groups, post hoc comparisons were made using the Scheffé method. To indicate effect size, Hedges' g was computed when comparing two groups. Partial eta squared was the selected effect size when more than two groups were compared. The significance level used in all tests was 0.005.

Ethical considerations and confidentiality of data

Before commencing the study, ethical approval was obtained from the Ethical Review Board of Nepal Health Research Council (NHRC) (ref. no. 1875; reg, no: 71/2017). Both collection and storage of data were done according to their rules. The records from the study were kept strictly confidential and locked down so that no persons other than the researcher had access to them. All electronic information was coded and secured using a password protected file, and all personally identifiable information was removed from the data set in order to protect the participants' individual privacy. No information will be shared or published that would make it possible to identify any participant.

Results

Background data

In Table 1, selected demographic background data are presented for the seven largest castes and ethnic groups (N = 3148), omitting the "Others" group (N = 672). As can be seen from the table, boys and girls were almost equally distributed between the different groups. Most participants, irrespective of caste or ethnic belonging, lived in semi-urban areas. Parents from the Tharu and Khas Kaami (Dalit) groups were the most illiterate, whereas the Newar group had the highest educational level. A substantial number of parents were migrant workers.

Prevalence of EBP for boys and girls–Total sample

In Table 2, we have presented prevalence as to the Achenbach classification of "normal", "borderline" and "clinical" status according to American norms, both for the Total Problems scale and for the Externalizing and the Internalizing scales. Approximately, one fifth of all children had problems in the clinical range. The prevalence of internalizing problems was higher than externalizing problems.

Adjusted prevalence for Nepal

Since the Mountain region was somewhat over-sampled and the Middle Hills and Tarai regions under-sampled for 6-18-years-olds in our study, we computed sampling weights that took population numbers in the child population among the three geographic regions into consideration as well as the age distribution, both based on the Nepali 2011 census [26]. As a result, the prevalence of CBCL Total Problems in Nepali 6-18-year-olds who scored in the clinical range was estimated to 18.3%; boys: 19.1% and girls: 17.6%.

Prevalence of EBP between the different castes and ethnic groups

The prevalence of child EBP varied among the different castes and ethnic groups (Table 3). It was highest for the Khas Kaami (Dalit) group and lowest for the indigenous Tharu group.

The magnitude of EBP for boys and girls–Total sample

Table 4 shows mean scores for the whole sample by gender. Boys scored significantly higher than girls on Total Problems, Externalizing Problems, as well as on the three subscales: Social Problems, Thought Problems and Attention Problems. However, there were no gender differences in mean scores for the Internalizing scale. The effect sizes for the gender comparisons can be considered as small according to Cohen (1988) [31], with Hedges' g ranging from 0.02 to 0.20.

Table 1. Distribution of selected demographic variables for the seven largest castes and ethnic groups.

Castes and ethnic groups	Chhetri	Hill Brahmin	Magar	Tharu	Tamang	Newar	Khas Kaami (Hill Dalit)
N (%)	866 (22.7)	905 (23.7)	187 (4.9)	246 (6.4)	335 (8.8)	162 (4.2)	447 (11.7)
Background variables							
Gender							
Boys	427 (49.3)	457 (50.5)	93 (49.7)	124 (50.4)	180 (53.7)	68 (42.0)	235 (52.6)
Girls	439 (50.7)	448 (49.5)	94 (50.3)	122 (49.6)	155 (46.3)	94 (58.0)	212 (47.4)
Geographic Location							
Mountain	125 (14.4)	158 (17.5)	11 (5.9)	1 (0.4)	121 (36.1)	6 (3.7)	49 (11.0)
Hill	431 (49.8)	457 (50.5)	128 (68.4)	27 (11.0)	116 (34.6)	111 (68.5)	265 (59.3)
Tarai	310 (35.8)	290 (32.0)	48 (25.7)	218 (88.6)	98 (29.3)	45 (27.8)	133 (29.8)
Rural/Semi-urban/Urban[1]							
Rural	227 (26.2)	242 (26.7)	28 (15.0)	19 (7.7)	111 (33.1)	19 (11.7)	124 (27.7)
Semi-urban	423 (48.8)	489 (54.0)	117 (62.6)	200 (81.3)	181 (54.0)	74 (45.7)	259 (57.9)
Urban	216 (24.9)	174 (19.2)	42 (22.5)	27 (11.0)	43 (12.8)	69 (42.6)	64 (14.3)
Types of School							
Governmental	359 (41.5)	321 (35.5)	91 (48.7)	171 (69.5)	195 (58.2)	68 (42.0)	348 (77.9)
Private	507 (58.5)	584 (64.5)	96 (51.3)	75 (30.5)	140 (41.8)	94 (58.0)	99 (22.1)
Mother's Occupation							
Housewife	596 (68.8)	606 (67.0)	134 (71.7)	192 (78.0)	237 (70.7)	100 (61.7)	319 (71.4)
Public Service	53 (6.1)	59 (6.5)	6 (3.2)	5 (2.0)	14 (4.2)	4 (2.5)	10 (2.2)
Private Business	69 (8.0)	102 (11.3)	20 (10.7)	13 (5.3)	24 (7.2)	29 (17.9)	36 (8.1)
Farmer	116 (13.4)	91 (10.1)	16 (8.6)	26 (10.6)	39 (11.6)	17 (10.5)	58 (13.0)
Migrant Worker	7 (0.8)	13 (1.4)	2 (1.1)	3 (1.2)	9 (2.7)	2 (1.2)	11 (2.5)
Others	25 (2.9)	34 (3.8)	9 (4.8)	7 (2.8)	12 (3.6)	10 (6.2)	13 (2.9)
Father's Occupation							
Private business	192 (22.2)	266 (29.4)	26 (13.9)	54 (22.0)	58 (17.3)	68 (42.0)	76 (17.0)
Farmer	264 (30.5)	251 (27.7)	46 (24.6)	88 (35.8)	118 (35.2)	31 (19.1)	163 (36.5)
Migrant worker	150 (17.3)	131 (14.5)	45 (24.1)	28 (11.4)	65 (19.4)	20 (12.3)	88 (19.7)
Others	126 (14.5)	120 (13.3)	25 (13.4)	65 (26.4)	71 (21.2)	28 (17.3)	94 (21.0)
Family Education[2]							
Illiterate	83 (9.6)	44 (4.9)	10 (5.3)	57 (23.2)	47 (14.0)	8 (4.9)	76 (17.0)
Primary Level[3]	154 (17.8)	147 (16.2)	51 (27.3)	71 (28.9)	137 (40.9)	26 (16.0)	175 (39.1)
Secondary Level[4]	528 (61.0)	544 (60.1)	117 (62.6)	110 (44.7)	141 (42.1)	83 (51.2)	182 (40.7)
University Level[5]	101 (11.7)	170 (18.8)	9 (4.8)	8 (3.3)	10 (3.0)	45 (27.8)	14 (3.1)

[1]The place of residence (rural, semi-urban, urban) was defined according to the official classifications made by the Ministry of Federal Affairs & General Administration (MOFAGA) and further verified by parent's own reports.

[2]In the households with two parents, the higher education level was used.

[3] Primary level of education consists of grade 1 to 8.

[4] Secondary level of education consists of grade 9 to 12.

[5] University level includes Bachelor, Masters or PhD degree.

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The magnitude of EBP in the different castes and ethnic groups

Table 5 presents the comparison of mean scores on the different problem scales between the seven largest castes and ethnic groups using one-way ANOVA. The Khas Kaami (Dalit) group scored the highest and the Tharu group scored the lowest on all scales. In the post hoc multiple comparisons, the Tharu group differed from the Chhetri, the Brahmin Hill and the Khas Kaami groups on Total Problems, Externalizing Problems, Social Problems, Thought

Table 2. Prevalence of EBP for boys and girls–Total sample.

	Gender		Total (N = 3820)
	Male	*Female*	
	(N = 1914)	*(N = 1906)*	
Total Problems T score			
Normal (<60)	68.7%	71.5%	70.1%
Borderline (60–63)	11.2%	10.4%	10.8%
Clinical (>63)	20.1%	18.1%	19.1%
Internalizing problems T score **			
Normal (<60)	61.9%	66.9%	64.4%
Borderline (60–63)	12.7%	10.3%	11.5%
Clinical (>63)	25.4%	22.8%	24.1%
Externalizing problems T score *			
Normal (<60)	76.5%	80.3%	78.4%
Borderline (60–63)	7.9%	6.8%	7.4%
Clinical (>63)	15.6%	12.9%	14.2%

*P<0.05;

**P<0.005;

***P<0.0005. For gender comparisons, the Pearson's chi square test was used.

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Problems and Attention Problems. For Internalizing Problems, the Tharu group differed only from the Chhetri and Khas Kaami, whereas the Tamang group differed from the Khas Kaami and Chhetri groups. However, the effect sizes were small, with partial eta squared ranging between 0.010 to 0.015.

Associations between EBP and geographic region and types of area

There were no differences in the magnitude of problems between the three geographic regions, except for higher Internalizing Problems in the Mountain region. However, there were

Table 3. Prevalence of EBP for the seven largest castes and ethnic groups.

	Chhetri	Brahmin- Hill	Magar	Tharu	Tamang	Newar	Khas Kaami	Total
Total Problems Tscore ***								
Normal (<60)	65.6%	71.8%	73.3%	78.9%	72.5%	70.4%	63.3%	69.5%
Borderline (60–63)	12.1%	9.5%	8.6%	8.1%	13.1%	13.6%	9.6%	10.7%
Clinical (>63)	22.3%	18.7%	18.2%	13.0%	14.3%	16.0%	27.1%	19.8%
Internalizing Problems Tscore ***								
Normal (<60)	60.5%	64.5%	67.4%	73.6%	67.5%	66.7%	58.4%	63.8%
Borderline (60–63)	12.0%	11.6%	12.3%	8.5%	12.5%	10.5%	8.7%	11.2%
Clinical (>63)	27.5%	23.9%	20.3%	17.9%	20.0%	22.8%	32.9%	25.0%
Externalizing Problems Tscore ***								
Normal (<60)	76.2%	77.3%	81.3%	88.2%	82.4%	78.4%	72.0%	77.9%
Borderline (60–63)	6.6%	8.4%	7.0%	4.9%	7.2%	8.0%	6.9%	7.2%
Clinical (>63)	17.2%	14.3%	11.8%	6.9%	10.4%	13.6%	21.0%	14.9%

*P<0.05;

**P<0.005;

***P<0.0005. For group comparisons, the Pearson's chi square test was used.

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Table 4. The magnitude of EBP for boys and girls–Total sample.

	Boys (N = 1914) Mean (SD)	Girls (N = 1906) Mean (SD)	Total (N = 3820) Mean (SD)	Gender effect F	Effect size g [a]
Total Problems	31.19 (26.67)	28.14 (24.47)	29.67 (25.64)	13.54 ***	0.11
Externalizing Problems	8.44 (8.52)	6.86 (7.35)	7.65 (7.99)	37.35 ***	0.19
Internalizing Problems	9.01 (8.09)	9.21 (7.96)	9.11 (8.03)	0.57	-0.02
Social Problems	3.50 (3.25)	3.18 (3.02)	3.34 (3.14)	9.92 **	0.10
Thought Problems	2.44 (3.07)	2.11 (2.79)	2.27 (2.94)	12.17 ***	0.11
Attention Problems	4.24 (3.75)	3.52 (3.36)	3.88 (3.58)	38.62 ***	0.20

*P<0.05;

**P<0.005;

***P<0.0005;

[a]Hedges' g.

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significant interactions between geographic regions and types of living area on Total Problems, as well as on the two broadband scales (Table 6). In the Mountain and Middle Hills regions, the problem scale scores were higher in the rural areas than in the semi-urban or urban areas. In contrast, children living in rural areas in the Tarai region scored lower than those living in semi-urban and urban areas. The sizes of the interaction effects were small, with partial eta squares less than 0.01.

Discussion

This study assessed the prevalence and amount of EBP among schoolchildren in Nepal and compared the prevalence and magnitude of problems among different groups based on gender, caste / ethnicity, and types of area (urban, semi-urban and rural).

Multicultural norms of the CBCL

Based on data from 31 societies, Achenbach and Rescorla constructed different norm groups (high, medium, and low) for the CBCL, based on the omni-cultural mean of 22.5 (SD 5.6) that was found by averaging the Total Problem scores of the 31 cultures [32]. Nepal has not yet been included in the ranking of countries due to the lack of internationally published scientific studies. However, the present study, showing a Total Problems mean score of 29.7 (SD 25.6), suggests that Nepal should be placed under the high scoring countries.

Table 5. The magnitude of EBP in the different castes and ethnic groups.

	Chhetri N = 866 Mean (SD)	Brahmin-Hill N = 905 Mean (SD)	Magar N = 187 Mean (SD)	Tharu N = 246 Mean (SD)	Tamang N = 335 Mean (SD)	Newar N = 162 Mean (SD)	Khas Kaami N = 447 Mean (SD)	Group effect F	Partial Eta squared
Total problems	32.67 (27.55)	29.95 (25.23)	27.16 (25.65)	22.53 (23.59)	26.76 (22.21)	28.82 (22.38)	34.15 (28.70)	8.15***	0.015
Externalizing Problems	8.24 (8.55)	7.78 (7.91)	6.48 (7.08)	5.69 (7.07)	6.69 (7.36)	7.82 (7.39)	8.89 (8.77)	6.04***	0.011
Internalizing Problems	10.18 (8.87)	9.15 (7.78)	8.48 (7.98)	7.19 (7.50)	8.04 (6.67)	8.77 (7.25)	10.40 (9.08)	7.59***	0.014
Social Problems	3.71 (3.32)	3.38 (3.06)	3.14 (3.35)	2.50 (2.77)	3.02 (2.99)	3.10 (2.71)	3.77 (3.53)	6.95***	0.013
Thought Problems	2.54 (3.09)	2.24 (2.92)	2.20 (3.04)	1.58 (2.60)	1.97 (2.44)	2.12 (2.36)	2.80 (3.47)	6.38***	0.012
Attention Problems	4.22 (3.75)	3.92 (3.62)	3.77 (3.70)	3.01 (3.18)	3.66 (3.55)	3.74 (3.32)	4.38 (3.73)	5.11***	0.010

*P<0.05;

**P<0.005;

***P<0.000.

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Table 6. CBCL scores by geographic regions and types of living area- Total sample.

	Total Problems	Internalizing Problems	Externalizing Problems
	Mean (SD)	Mean (SD)	Mean (SD)
Mountain			
Rural Area (N = 352)	37.08(30.20)	12.03(9.92)	9.17(8.94)
Semi-Urban Area (N = 134)	22.82(21.30)	7.60(6.91)	5.19(6.23)
Urban Area (N = 0)	-	-	-
Total (N = 486)	33.15(28.73)	10.81(9.39)	8.07(8.46)
Hills			
Rural Area (N = 460)	32.92(28.12)	9.87(8.68)	8.61(8.99)
Semi-Urban Area (N = 902)	29.46(23.73)	9.14(7.62)	7.62(7.34)
Urban Area (N = 556)	28.60(23.19)	8.68(7.41)	7.31(7.28)
Total (N = 1918)	30.04(24.75)	9.18(7.84)	7.77(7.76)
Tarai			
Rural Area (N = 58)	20.05(20.99)	5.69(6.62)	5.55(6.22)
Semi-Urban Area (N = 1117)	26.93(25.83)	8.27(7.72)	7.08(8.10)
Urban Area (N = 241)	34.69(25.83)	9.90(7.57)	9.12(8.54)
Total(N = 1416)	27.97(25.59)	8.44(7.69)	7.36(8.15)
Main effect size of Geographic Region	F = 2.86	F = 6.81**	F = 1.12
	$\eta^2 = 0.002$	$\eta^2 = 0.004$	$\eta^2 = 0.001$
Main effect size of Rural, Semi-Urban and Urban Areas	F = 14.54***	F = 8.64***	F = 10.63***
	$\eta^2 = 0.008$	$\eta^2 = 0.005$	$\eta^2 = 0.006$
Effect of Interaction between Geographic Regions and Rural, Semi-Urban and Urban Areas	F = 13.85***	F = 12.94***	F = 10.014***
	$\eta^2 = 0.011$	$\eta^2 = 0.010$	$\eta^2 = 0.008$

*P<0.05;

**P<0.005;

***P<0.0005; η^2partial eta square.

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Comparison of results with other studies

We found that the percentage of Nepali children who scored in the clinical range, i.e. above the American cut-off, was 19.1% for Total Problems, with an adjusted prevalence of 18.3%. Compared to the overall prevalence of mental health problems for schoolchildren in Asian countries as reported in an earlier review [9], the prevalence for Nepal seems high. However, the prevalence is consistent with findings from school studies in neighboring countries, e.g. China: 19.1% [14] and India: 23.3% [10].

The relatively high prevalence of child problems in these and other LMICs might be due to a higher level of environmental risk factors such as natural disasters [33, 34] and adverse social circumstances like poverty and child abuse and neglect [35, 36]. Social disadvantages and family fragmentation (e.g. caused by migrant working parents) are known to elevate level of stress affecting the mental health of parents as well as children [37, 38]. A possible explanation for the higher problem scores in Nepal could be the exposure to the devastating earthquake that hit the country in 2015 and the traumatic events that followed in its wake. The mental health effect of exposure to disasters like earthquakes, especially on children, is still largely unknown, and various resilience and posttraumatic growth (PTG) factors may be involved [39]. However, the present study was not designed to address a possible link between child EBP and disaster exposure, and this hypothesis should be considered with caution. Other studies comparing areas hit by the earthquake with areas not affected are needed to confirm it. Further, the higher

prevalence of EBP may be due to the poor and stressful living conditions experienced by many families in a LMIC country like Nepal. Yet another reason might be that Nepali parents might have a different threshold for reporting child EBP due to cultural norms. Cultural differences affecting parents' ratings and interpretation of child behavior have been explored to a rather small extent internationally, and to our knowledge, no such studies have been performed in Nepal. Finally, it should be noted that the higher prevalence might be due to methodological reasons. In our study, we used a screening instrument (CBCL) and studies using screening instruments may yield higher prevalence rates than studies using diagnostic tools [9].

We found a higher level of Total Problems and Externalizing Problems in boys than in girls. This finding converges with findings from other international studies [18]. It also converges with the earlier Nepali dissertation study by Mahat mentioned in the introduction [15], suggesting the same gender pattern for Nepal. However, we did not find more Internalizing Problems in girls than in boys, contrasting to the findings from international meta-studies [18, 40]. Our finding may be due to cultural or methodological factors and needs replication for verification. More studies on gender patterns in child EBP are warranted across cultures, especially from the less investigated LMICs.

An interesting finding in our study was the higher prevalence of internalizing problems (24.1%) compared to externalizing problems (14.2%). The finding converges with a recent epidemiological study from Kenya [41]. Like in the Kenyan study, a possible explanation for the elevated Internalizing Problems score could be the higher awareness and subsequent higher scorings of somatic symptoms by the parents. In Nepal, where there is very little awareness of mental problems in general, and particularly in children, parents tend to pay more attention to their child's physical symptoms than their conduct and may define problems accordingly. Besides, Nepali children, like children from other South Asian countries, are socialized to control their frustrations and negative emotions, i.e. to internalize their problems, rather than acting them out [42]. Internationally, cross-cultural studies have shown significant variations in the relative dominance of internalizing versus externalizing problems [40, 43]. Due to different cultural norms and different socio-religious contexts, the types of problems that children express will differ. In countries where the culture discourages child aggression and other uncontrolled behaviors, internalizing problems like shyness, anxiety, and depression are noted more often, whereas in cultures that accept acting-out of emotions, externalizing behaviors are noted more often [40].

Within-country differences in EBP

Cross-cultural comparisons showed that the Khas Kaami (Dalit) group had the highest prevalence of EBP. In Nepal, experiences of caste-based discrimination are found to be prevalent among the Dalit [44] and may be one of the main reasons for the higher problem level. In contrast, the Tharu, who mostly live in small villages in the Tarai region, showed the lowest amount of EBP. One possible explanation for the lower scores in this tribal, indigenous group may be that it has some strong protective factors, both at the individual, family, and social level. However, a more detailed investigation among the Tharu people exploring family and social factors that may influence child EBP is warranted. Further, parent ratings may differ across ethnic groups depending upon differences in cultural norms and attitudes of reporting problems. Internationally, studies have shown that parents of ethnic minorities may be less likely to perceive problem behavior in their children when compared to ethnic majority parents [45, 46]. A third explanation may be that the linguistic problems as well as the high level of illiteracy among the Tharu parents might have interfered with their ratings in such a way that reporting problems became more difficult. The Tharu people have their own mother language which differ from the majority Nepali language. Lack of language skills might have

hampered the communication between the parents and the research assistants as well as making the perception of questions more demanding.

We observed only small differences in the amount of child problems between geographic regions. However, some interesting interactions emerged for regions with types of living area. In the Mountain and Hills regions, children who lived in the rural areas had the highest problem scores, whereas in the Tarai region, children in the urban areas scored the highest. The higher problem scores in the rural areas in the Mountain region may be due to poverty and the tougher living conditions that exist in those areas [26]. The higher amount of problems found in the urban areas of the Tarai region may be due to the migration of families from the countryside to the cities in search of better working opportunities. Urbanization might lead to adjustment problems, more stress exposure, and increased vulnerability due to factors like overcrowding, low social support, inadequate security, and increased violence [47, 48]. The disparities in our findings converge with findings from the international literature. Some studies have found more child problems in rural areas [27], whereas others have found more problems in urban areas [47]. As countries differ in their economic development and cultural orientations, rural—urban differences in one country may not be generalized to other countries [28]. Based on the present study, we argue that this may be the case within a specific country as well–especially in countries as diverse as Nepal.

Strengths and limitations of the study

This epidemiological study is the first internationally published study on the prevalence and amount of EBP in Nepali schoolchildren as reported by their parents. We have used one of the most wide-spread and internationally validated instruments to assess child problems: the CBCL/6-18. The Cronbach's alpha in our study was above 0.7 for all eight syndrome scales. We used sound methodology and thorough procedures in data collection, including helping illiterate parents with the filling in of forms and reaching out to parents who could not manage to visit the school. This probably increased parents' trust and willingness to participate in the study and resulted in a very high participation rate: 99.5%.

There are some methodological limitations of the study. First, our prevalence estimation was done by using the American norms of the CBCL as Nepali norms do not yet exist. Hopefully, future studies may provide separate norms for Nepal. Although we collected our data in all the main geographic regions of Nepal and in 16 districts in different parts of the country, we cannot claim that the results are representative for the whole country. Further, the number of participants in some of the castes and ethnic groups were small, which might have affected the results and made them less reliable. Hence, future studies with larger samples are recommended for those groups to confirm the findings.

Another limitation is that fathers' reports were not assessed. Generally, fathers who are substantively involved in their children's lives, may provide valuable information about their children's problems [49].

The present paper focuses on the magnitude of child problems and how problems may vary across gender, different cultural groups, and types of living area. It does not include an examination of family- and social correlates of EBP. Such associations will be the focus in a subsequent paper currently in progress, and with the same sample of Nepali children.

Conclusion

The study provides new knowledge about the prevalence of child EBP in a LMIC. It amply demonstrates that in a country like Nepal, many children may suffer from various types of mental problems which may need attention. Furthermore, it highlights the importance of

taking into account possible gender- and cultural differences in the magnitude and types of child problems, as well as pointing to rural–urban differences. The findings may be useful to the health authorities in developing child- and adolescent mental health services. Finally, the study provides important background information for both clinicians and teachers in dealing with child mental health problems.

Supporting information

S1 File.
(SAV)

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RESEARCH ARTICLE

Family correlates of emotional and behavioral problems in Nepali school children

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Abstract

Background

There is a substantial gap in our knowledge about family correlates of child emotional and behavioral problems in low- and middle-income countries (LMIC). The present study contributes to filling this gap by examining such correlates in a larger population study in Nepal.

Methods

Our study is a cross-sectional, observational study among 3840 Nepali children aged 6–18 years from 64 schools and 16 districts in the three main geographical regions in the country. We used the Nepali version of the Child Behavior Checklist (CBCL)/6-18 to assess children's internalizing and externalizing problems and an additional background information questionnaire to assess possible family correlates which included parental education, family structure, migrant worker parents, parental mental and physical illness, family conflicts, and child-rearing. The associations between family variables and child internalizing and externalizing problems were analyzed using bivariate correlations and multiple regression.

Results

Using bivariate analysis, we found that mental and physical illness in parents, conflict in the family, parental disagreement in child-rearing, and physical punishment of child correlated positively with both Internalizing Problems and Externalizing Problems. The same associations were found by using multiple regression analysis. In addition, parental education, family structure, and migrant worker mothers were associated with Externalizing Problems. However, the effect sizes were small.

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Conclusion

The results suggest that in Nepal, child mental problems were associated with several family risk factors. Further, the study points to the need of strengthening prevention- and intervention measures to minimize family risk factors of child mental health disorders.

Introduction

Children constitute 42% of the world's population and roughly 90% of these live in low- and middle-income countries (LMIC) [1]. Children in LMIC have increased risk for mental illness due to social and environmental conditions such as poverty and lack of child mental health services [2, 3]. There is a substantial gap in economic and human resources for child mental health services, particularly in LMICs. Documenting children's mental health problems and associated risk factors can provide stronger arguments for care. The present study aims at providing new epidemiological knowledge about family correlates of child emotional and behavioral problems (EBP) in the general child population of Nepal. In a previous, recently published paper, we reported data from the same sample on the prevalence, magnitude and types of child EBP in different castes and ethnic groups in Nepal and in different geographical locations and types of living area. The level of problems was found to be rather high, demanding additional investigations into possible family risk factors [4].

Not much research has been done on the association between environmental risk factors and child behavior problems in LMICs, including Nepal. Till now, there is no documentation on family correlates of child EBP in Nepal on a national level, and very few studies on child mental health have been conducted altogether in the country. Searching the data bases (PubMed, Google scholar, and PsycINFO), only two small-scale Nepali studies on correlates of child EBP were found. One study, which was done among adolescents in Hetauda Municipality in Central Nepal, found that adolescents whose families had frequent disputes, adolescents from nuclear families or adolescents living with a single parent, and adolescents of illiterate parents were more likely to have a psychosocial dysfunction [5]. A qualitative study on children done in a rural area in Chitwan district, Tarai region, suggested that an unfavorable family environment and physical punishment might lead to increase of emotional problems in children [6]. This sparse amount of research points to the fact that more and larger epidemiological studies are warranted, especially studies on a national level.

The international literature has consistently documented the influence of environment on children's behavior and psychosocial functioning [7, 8]. Worldwide, several types of environmental risk factors have been found to associate with EBP, including specific family- and parenting factors [9, 10].

As for the effect of parental education level on child EBP, studies have found that a lower parental education level associates with more child behavioral problems and less psychological wellbeing [11–13]. Children from families with higher educated parents showed lower risk of mental health problems than their peers with less educated parents [14, 15].

Further, literature suggests that children raised by single mothers may be at increased risk of child EBP [16, 17]. In studies examining extended family households as a potential risk factor of child EBP, results are ambiguous. Some studies have suggested that living in an extended family has a positive impact on children [18], whereas other studies show higher levels of EBP in extended families than in nuclear families [19–21]. The cultural and economic context of families may probably explain the discrepancy. In some societies, living in an extended family

may be a sign of low socioeconomic status and lack of resources, whereas in other societies it may be culturally established as a good way of organizing family life, offering several advantages. However, few studies have examined the effect of family structure (i.e. single motherhood, versus nuclear family, versus extended family) on child EBP in LMICs, including Nepal.

Another factor pertaining to family life that may influence child EBP, is the increasing number of migrant worker parents in search of employment opportunities, leaving their children back home. Migrant worker parents are a common phenomenon in many LMICs. A recent systematic review and meta-analysis study showed that compared with children of non-migrant worker parents, left-behind children had increased risk of mental health problems [22]. Several studies from China reported that left-behind children experienced more mental health problems, poorer school performance, and early school dropouts [23–25].

A large body of research has demonstrated that a stressful family life caused by parental psychopathology, somatic illness in parents, family conflicts, as well as impaired parenting may affect children's mental health and psychosocial development [26, 27]. For instance, it has been found that parental psychopathology may increase the risk for both internalizing and externalizing behavior problems in children [27–29]. Similarly, studies suggest that parents' physical illness can lead to negative psychological outcome in children, including increased rates of internalizing and externalizing behavior problems [30, 31]. Further, conflicts in the family, in particular marital conflict and disagreement about child-rearing, emerge as significant risk factors for the development of psychopathology in children, either directly or indirectly [32–34]. Parental disagreement in child-rearing is found to associate with both internalizing and externalizing problems in children [35, 36].

As for harsh parenting, such as physical punishment, studies from many societies show a positive association with child EBP. A comprehensive meta-analysis including 160,927 children from both US based- and international studies found that spanking associated with both internalizing and externalizing child behaviors [37]. Another meta-analysis with children from several countries found that physical punishment was associated with adverse child outcomes, especially in countries in which physical punishment was less culturally normative [38]. In Nepal, physical punishment of children is widely accepted [39]. A recent Nepali study suggested that a series of negative behaviors in children may provoke physical punishment by parents as well as by teachers [6]. However, both in Nepal and in other LMICs, few studies have explored the effect of physical punishment on children's behavior on a larger scale.

In the present study, which is part of a large-scale epidemiological project [4], our specific aim was to assess the associations between selected family variables and internalizing and externalizing behavior problems in Nepali schoolchildren aged 6–18 years.

Materials and methods

Study design

The present study is a cross-sectional, observational study in the general population of Nepal.

Study site and population

Nepal is a mountainous country and is topographically divided into three regions: the Himalaya (Mountain region) to the north, the Middle Hills region, which lies between the northern- and southern belts, and the Terai region to the south. The capital city Kathmandu lies in the Middle Hills region. Nepal has a population of 29.1 million people (2020). Nepal is ranked among the low- and middle-income countries (LMIC) with per capita nominal Gross Domestic Product (GDP) of 1,090 US$ [40]. According to the Nepal Demographic and Health Survey (2016), about 30% of all women and 10% of all men were illiterate, and 17% of women and

19% of men had attended primary school only [41]. According to the Central Bureau of Statistic (CBS) Nepal, 2011, children below 18 years of age represent 44.4% of the total population: 22.5% boys and 21.9% girls. Female-headed households (single motherhood) were 25.7% of all households. Most single mothers were widows [42].

Subjects and procedure

This study was conducted in the 3 main geographical regions of Nepal where we purposively selected 3 districts from the Mountain region, 6 districts each from the Middle Hills and the Tarai regions, which added up to 15 districts. In addition, the Kathmandu district was included which makes it 16 districts in total.

Further, we purposively selected 4 schools (two government and two private schools) in each district based on accessibility and convenience, i.e., 64 schools in 16 districts. 6 students equally distributed across gender were randomly selected in each grade, from grade 1–10. Thus, in each district, 240 children were selected, which gave a total of 3840 children. The overall participation rate was 99.5% (i.e., 3820 students).

Procedure. After an approval was received from the Ministry of Education, Nepal, meetings were scheduled with the school coordinators and school principals and information about the study and the reasons for carrying out the research were provided. Data collection was performed by 30 trained research assistants (RA) and 7 trained field supervisors who were in turn supervised by the researcher. Once the students were randomly selected, their mothers were invited to the school with the help of the school administrator who sent an invitation letter to the families. Both oral and written information about the study were provided. Informed consent was then obtained from the parents by the RAs and confidentiality was assured. Those parents not showing up were informed by home visits by the RAs and invited to participate. For illiterate parents, the RAs verbally posed the questions to them, and helped fill in the forms. The parents were encouraged to respond to all items in the questionnaires and were given the opportunity to ask questions about any item. A small gift was given as an acknowledgement of their participation in the study. The data were collected during September 2017–January 2018, and the plotting in of data was done manually during the first half of 2018 by three research assistants, monitored and supervised by the researcher. The proportion of missing items was not more than 0.1% for any of the items included in the instruments.

Measures

1. Child Behavior Checklist (CBCL 6–18). For this study, we used the Nepali version of the Child Behavior Checklist for ages 6–18 (CBCL/6-18) that had been translated into Nepali language in connection with a former Nepali study [43]. The CBCL/6-18 consists of 20 competence items and 120 problem items. The problem items are scored on 8 syndrome scales, 2 broadband scales: Internalizing and Externalizing, and a Total Problems scale. The syndrome scales: Withdrawn/Depressed, Somatic Complaints and Anxious/Depressed together form the "Internalizing" scale, and the scales: Rule-breaking behavior and Aggressive behavior together form the "Externalizing" scale. The Social Problems, Attention Problems, and Thought Problems scales do not belong to either of the broadband scales, but are included in the Total Problems scale, which is derived by summing up the individual item scores. The response format of questions on behaviors is: 0 = not true, 1 = somewhat or sometimes true, and 2 = very true or often true.

CBCL has been translated into more than 100 languages and has established good psychometric properties cross-culturally [44]. It has been found to have strong validity and good test-retest reliability and internal consistency. For empirically based syndrome- and competence

scales, the mean test-retest reliability was 0.90. Internal consistencies of the syndrome scales measured by Cronbach's alpha ranged from 0.78 to 0.94 [44].

To assess the internal consistency of the Nepali version of CBCL/6-18 for the present study, we computed Cronbach's alphas for the empirically based syndrome scales. The results are reported in a previous paper [4] and were: Withdrawn / Depressed: 0.71; Somatic Complaints: 0.79; Anxious / Depressed: 0.76; Rule-breaking Behavior: 0.76; Aggressive Behavior: 0.88; Social Problems: 0.73; Attention Problems: 0.80; Thought Problems: 0.75 [4].

2. Background information questionnaire. The parents were asked to fill in a questionnaire asking about background information. Selected family variables for this study were: 1) Parental education level which was categorized as follows: (a) no education (illiterate); (b) 1–8 years of education; (c) 9–12 year of education; and (d) more than 12 years of education. (2) Family structure, questions being asked with three options: (a) child living with a single parent, (b) nuclear family, or (c) extended family. "Single parenthood" was defined as living with a single parent (either a widow, a divorced, or separated parent). "Nuclear family" was defined as living with both parents and siblings, and "Extended family" as living with parents, siblings, grandparents and/or immediate relatives. (3) Migrant worker parents, the question being asked with a "yes" or a "no" option.

Questions about family life and child-rearing included: (4) Parental illness, the questions posed being whether any of the parents had any mental illness or had any physical illness or disabilities. The questions were asked with a "yes" or a "no" option and the parent was encouraged to explain further about symptoms if the answer was a "yes". Further, parents were asked about (5) Conflicts within the family, the question posed being: "Has there been any conflicts between family members causing stress in the family during the past 6 months?" The options offered were high, moderate, or low level of conflict. (6) Agreement in child-rearing was asked by posing the question: "Do you as parents agree as to child-rearing?", the options being "highly agree", "somewhat agree", and "totally disagree". As for (7) child-rearing methods, we asked whether the parents made frequently use of physical punishment to control the child's misbehavior. The question was asked with a "yes" or a "no" option.

Statistical analyses

The ASEBA data management and SPSS statistics version 26.0 for Windows were used for all analyses. First, bivariate correlations (Pearson correlation and Kendall's tau-b) were examined to assess the association between child internalizing or externalizing behaviors and family variables. Then, multiple regression analyses were done to assess the associations between the different independent variables and child behavior problems. In these regression analyses, all the independent variables entered the model. Child age, child gender, and traumatic life events were used as control variables. Main effects of the different correlates were then tested. Partial eta squared was selected for measuring the effect size. The significance level used for all tests was 0.005.

Ethical considerations and confidentiality of data

Ethical approval was obtained from the Ethical Review Board of Nepal Health Research Council (NHRC) (ref. no. 1875; reg, no: 71/2017). Both collection and storage of data were done according to their rules. The records from the study were kept strictly confidential and locked down so that no persons other than the researcher had access to them. All electronic information is coded and secured using a password protected file, and all the personally identifiable information has been removed from the dataset to protect the participants'

individual privacy. No information will be shared or published that would make it possible to identify any participant.

Results

Background variables

The background variables of the sample are presented in Table 1. As seen in the table, about 11% of the parents were illiterate. The majority (44%) had a primary level education only. Almost 20% of all parents were migrant workers, mostly fathers. Half of the children lived in a nuclear family. Almost a quarter of all parents had some kind of physical illness, but few parents reported a mental illness (3%). About 12% of the parents reported a moderate to high level of conflict in the family and about 36% reported a moderate to high disagreement in child-rearing. Few parents reported a frequent use of physical punishment of the child to control misbehavior (10%).

Table 1. Background table. Distribution of family variables.

Background variables	Total sample (N = 3820)
Parental education level	
Illiterate	417 (10.9%)
Primary level (grade 1 to 8)	1694 (44.3%)
Secondary level (grade 9–12)	1309 (34.3%)
University level (Bachelor, Masters, PhD)	400 (10.5%)
Family structure	
Single parent	380 (9.9%)
Nuclear family	2093 (54.8%)
Extended family	1347 (35.3%)
Migrant worker mother	
Yes	66 (1.7%)
No	3754 (98.3%)
Migrant worker father	
Yes	665 (17.4%)
No	3119 (81.6%)
Mental illness in parents	
Yes	120 (3.1%)
No	3700 (96.9%)
Physical illness in parents	
Yes	910 (23.8%)
No	2910 (76.2%)
Conflict in the family causing stress in the past 6 months	
Low level of conflict	3351 (87.8%)
Moderate level of conflict	383 (10.0%)
High level of conflict	86 (2.3%)
Parental disagreement in child-rearing	
Little disagreement	2451 (64.2%)
Somewhat disagrees	1085 (28.4%)
Highly disagrees	284 (7.4%)
Use of physical punishment to control the child	
Yes	384 (10.1%)
No	3436 (89.9%)

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Table 2. Bivariate correlations between family variables and child internalizing and externalizing problems.

Family variables	Internalizing Problems	Externalizing Problems
Parents' years of education	0.009 [a]	0.020 [a]
Family structure	0.006 [a]	0.001 [a]
Migrant worker mother	0.010 [b]	0.039 [b]
Migrant worker father	0.019 [b]	0.025 [b]
Parental mental illness	0.100 [b] *	0.091 [b] *
Parental physical illness	0.181 [b] *	0.134 [b] *
Conflict in the family causing stress	0.081 [a] *	0.080 [a] *
Parental disagreement in child-rearing	0.059 [a] *	0.083 [a] *

$p < 0.005$ = *;

[a] = Kendall's tau-b;

[b] = Pearson correlation.

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Family correlates of child EBP. When examining correlations between family variables and child EBP, we used both descriptive, bivariate, first-order correlation analyses and multiple, linear regression analyses.

Bivariate correlations. Table 2 shows the bivariate correlations. Using a significance level of 0.005, we found that mental and physical illness in parents, conflicts in the family, parental disagreement in child-rearing, and physical punishment of child correlated positively with both internalizing and externalizing problems.

Multiple regression analyses. Multiple regression analyses were performed to examine the association between family variables and child Internalizing Problems and Externalizing Problems (Tables 3 and 4). For the Internalizing case, when adding the family correlates to a model already containing the control variables (child age, child gender, and life events), the proportion of the total variance explained increased from $R^2 = 0.037$ to $R^2 = 0.087$, and for the externalizing, R^2 increased from 0.027 to 0.083. When all the family variables and control variables were entered simultaneously, parents' education level, mental and physical illness in parents, and parental disagreement in child-rearing were significantly correlated with child Internalizing problems, but not family structure, migrant worker mother, migrant worker father, and physical punishment of child. For Externalizing problems, all family variables except for migrant worker father were significant.

Children of parents with 9 to 12 years of education scored the highest and children of parents with no education the lowest. Children from extended families scored higher, whereas children from single parent families had the lowest scores. Children whose mothers were migrant workers scored higher than children whose mothers were not migrant workers. Children with parents who had a mental illness scored higher than children whose parents were not mentally ill. Children with physically ill parents scored higher than children whose parents were not physically ill. Children belonging to families that experienced high level of conflict in the past 6 months scored higher than children belonging to families with a low level of conflict. Children experiencing frequent physical punishment scored higher than those not experiencing physical punishment.

Discussion

In this study, we found significant associations between child EBP and family variables, such as: parental level of education, family structure, mental- and physical illness in parents, family conflicts, and child-rearing practices. However, the variables included in the study only

Table 3. Multiple regression analysis of associations between family factors and internalizing problems.

Variables	F	B	SE	Partial eta squared
Parental Education level (Reference group: Illiterate-0 years of education)	6.774			0.005**
Primary School (1–8 grade)		1.698	0.430	0.004**
Secondary School (9–12 grade)		1.783	0.448	0.004**
University education (Bachelor, Masters, PhD)		0.864	0.553	0.001
Family Structure (Reference group: Nuclear family)	3.823			0.002
Single family		-0.219	0.438	0.000
Extended family		0.683	0.271	0.002
Migrant worker mother (Reference group: Non-migrant worker mother)	1.570	1.218	0.972	0.000
Migrant worker father (Reference group: Non-migrant worker father)	0.159	-0.133	0.333	0.000
Parental mental illness (Reference group: No mental illness)	11.305	2.459	0.731	0.003*
Parental physical illness (Reference group: No physical illness)	83.475	2.749	0.301	0.022**
Family conflict (Reference group: Low level of conflict)	18.883			0.010**
High level of conflict		2.198	0.866	0.002
Moderate level of conflict		2.432	0.425	0.009**
Parental disagreement in child-rearing (Reference group: Low level of parental disagreement)	5.819			0.003*
Highly disagree		0.886	0.499	0.001
Somewhat disagree		0.929	0.290	0.003*
Use of physical punishment of child (Reference group: No frequent use of physical punishment of child)	5.892	1.034	0.426	0.002
R^2 (control variables)	0.037			
R^2 (full model)	0.088			

*$p < .005$;

**$p < .0005$.

F = "F-test statistic"; B = "unstandardized regression coefficient"; SE = "Standard error".

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explained about 8–9% of the total variance in internalizing and externalizing problems, and the effect sizes were small for all included family variables.

When examining the association between parental education and child EBP, we found that children with parents who had 9–12 years of education tended to have more EBP, whereas children of illiterate parents had less problems. This result contrasts with other studies where children of the lowest educated parents had more EBP [11–13]. One explanation may be the inclusion of illiterate parents from indigenous groups/ ethnic minorities in our sample [4]. International studies have reported that parents of ethnic minorities maybe less likely to perceive EBP in their children as compared to parents of ethnic majority groups due to less acknowledgement of such problems [45]. Further, their reports of a lower amount of EBP may be because some of them had language difficulties as their home language was other than Nepali. Hence, they might have had difficulties in understanding the meaning of some of the questions and therefore chose the option with the lowest score.

We found that children living in extended families had more externalizing problems. Statistically, it was a larger difference between extended and single families than between extended and nuclear families. Our finding is consistent with a recent study from the USA which reported that children living in extended family households had more EBP than children living in nuclear family households [19]. Most of the present research in Western countries on family structure focuses on the presence or absence of a child's biological parents in a household, and on parents' marital or cohabitation status [46, 47]. However, an exclusive focus on nuclear family organization might produce an incomplete account of how family structure is related to child behavior and development. In Nepal, as in most LMICs, children often live-in

Table 4. Multiple regression analysis of associations between family factors and externalizing problems.

Variable	F	B	SE	Partial eta squared
Family education (Reference group: Illiterate i.e. 0 education)	5.040			0.004*
Primary school (1–8 grade)		1.560	0.429	0.003**
Secondary school (9–12 grade)		1.658	0.447	0.004**
University education (Bachelors, Masters, PhD)		1.365	0.552	0.002
Family Structure (Reference group: Extended family)	7.010			0.004*
Single family		-1.601	0.455	0.003**
Nuclear family		-0.670	0.270	0.002
Migrant worker mother (Reference group: Non-migrant worker mother)	9.651	3.013	0.970	0.003*
Migrant worker father (Reference group: Non-migrant worker father)	1.305	-0.380	0.333	0.000
Parents' mental illness (Reference group: No mental illness)	11.913	2.519	0.730	0.003*
Parents' physical illness (Reference group: No physical illness)	47.468	2.069	0.300	0.012**
Family conflict (Reference group: Low level of conflict)	17.766			0.009**
High level of conflict		2.671	0.864	0.003*
Moderate level of conflict		2.228	0.424	0.007**
Parental disagreement in child-rearing (Reference group: Low level of parental disagreement)	9.736			0.005**
Highly disagree		1.009	0.498	0.001
Somewhat disagree		1.227	0.289	0.005**
Use of physical punishment of child (Reference group: No frequent use of physical punishment of child)	37.246	2.593	0.425	0.010**
R^2 (control variables)	0.027			
R^2 (full model)	0.083			

*$p < .005$;

**$p < .0005$.

F = "F-test statistic"; B = "unstandardized regression coefficient"; SE = "Standard error".

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multigenerational households with grandparents, aunts, uncles, and other relatives such as cousins, collectively referred to as 'extended family'. Internationally, research has shown that living in extended family households may be disadvantageous for child behavioral development, and mostly among married parent extended family households [48]. Others have found that the influence of extended household structures on children's cognitive and behavior development and emotional regulation might differ in different ethnic groups [20, 21]. Previous studies have found that extended family members may increase family stress by taking up housing space and through conflicts and negative interactions with parents, or they may change the distribution of resources within the household by absorbing resources that would otherwise be used for the children [49]. Extended families might include elderly members requiring care and attention by parents which may lead to decreased interactions between parents and children affecting child behavioral adjustment and psychological health [48]. However, empirical evidence to support this idea is lacking. On the other hand, extended family households may include extra caregivers who also provide extra income which may be beneficial to children's behavior development [18]. Further, studies have found that children who grow up with their grandparents live longer and are happier, and that grandparents may play an important part in solving family conflicts and in children's emotion regulation through their compassion and wisdom [50]. In Nepal, few studies on the association between family structure and child EBP have been published. Hopefully, our study may serve as a springboard for future, more detailed studies in this field of research.

In the present study, we found a positive association between parental mental illness and child behavioral problems. This result is consistent with previous findings that parental mental

illness negatively influences child EBP [27–29]. Parent's mental illness is clearly a risk factor for psychiatric disturbances in offspring, operating through a variety of genetic, psychological, and interactive mechanisms. Studies have demonstrated that there is a strong genetic link between parent and child psychology [51]. However, an examination of genetic links laid outside the scope of the present study- the focus of which was on the socio-environmental correlates of child EBP. Other studies have found that mental illness in parents can lead to relationship discord between parent and child, poor general parenting skills, social isolation of family, and poverty which can place children at much greater risk of impaired social, psychological and physical health than other children [52]. In addition, there may be a reciprocal relationship between parent's behaviors and child behaviors. It is conceivable that children who consistently observe internalizing behaviors (e.g., sitting alone, crying) or externalizing behaviors (e.g., yelling, shouting, hitting) in adults are more likely to imitate these behaviors than children who have never or rarely observed these kinds of behaviors [53, 54]. In our study, we found a low percentage of mental illness in parents. In a LMIC like Nepal, stigma and lack of awareness related to mental illnesses might be the reason for this low percentage. The real numbers of mental illnesses might be much higher. When parents do not seek treatment for their mental illness, self-blame on part of the child may result and this may accentuate other risk factors [55].

Similarly, our study showed a significant association between physical illness in parents and child internalizing and externalizing problems. This finding is in accordance with previous studies [31, 56]. One possible explanation may be the disruption of parenting due to lack of energy and stamina, or inability to provide adequate attention to their children due to their physical health issues [57]. Also, parental poor health might influence parental perception of their child's health. Studies have shown that mothers who self-reported poor health had increased odds of reporting their children with poor health [58]. However, the relationship between parents' illness and child EBP is not fully understood. Different illnesses are believed to affect families in different ways, and different kinds of adaptive behaviors may be required. A more thorough investigation into these matters is warranted.

We found a significant association between conflicts in the family causing a high level of stress, and child EBP. Our finding is in line with other international studies which show that conflicts in the family, particularly between parents, is a significant risk factor for the development of psychopathology in children [59, 60]. Generally, the effect of family conflict on children is explained by the extent to which one or more aspects of emotional security are negatively affected and the extent to which children are able to regulate general emotional distress [32, 34]. There are several potential mechanisms through which conflicts in a family might influence the occurrence of child EBP. For example, children's emotional security can be enhanced or undermined by the quality of the parent-child relationship, the context of a conflict, and conflicts between parents. However, exploring such mechanisms was beyond the scope of the present study.

Our study found a positive correlation between parental disagreement in child-rearing and both internalizing and externalizing problems. Our findings replicate the results from previous international studies. A meta-analysis by Teubert and Pinquart showed that the degree of disagreement about child-rearing between parents was significantly linked to children's maladjustment [36]. A possible mediating variable of parental disagreement in child-rearing on EBP is the poor conflict resolution strategies of parents. Child-rearing disagreement may frequently occur with the child present and may provoke negative emotions in the child [61]. Children may imitate the parents' argumentative, hostile, emotional conflict-resolution strategies, and such child behaviors could then be perceived as externalizing behavior problems by the parents. Alternatively, the child may withdraw in the face of disagreement between the parents

and become sad, which is then perceived by the parents as internalizing problems. No studies on the association between parental disagreement in child-rearing and child EBP has been conducted in Nepal, and further exploration of its effect on child mental health is warranted in future studies.

In the present study, physical punishment was found to associate with Externalizing Problems. Similar findings have been reported by several international studies [62]. A meta-analysis of a sample of 292 middle-class families with 8–12 years-old children from several countries (China, India, Italy, Kenya, Philippines and Thailand), found that physical punishment which included spanking, slapping, grabbing, shaking, and beating up, was associated with adverse child outcomes [38]. A study using nationally representative data in Nepal suggested that physical punishment of children is a common phenomenon with a prevalence ranging from 34% in the central hilly region to 60% in the mid-western hill region [63]. The prevalence is similar to other LMICs [39]. However, no previous Nepali studies have explored possible associations between physical punishment and child EBP. Hence, further research is paramount to explore such associations in more detail. The findings from this study suggest that protecting children from physical violence through national policies is warranted, focusing on eliminating corporal punishment in homes as well as in schools. Our recommendation is in line with a recent recommendation from the United Nation Children Fund (UNICEF) [64].

Globally, there are around 272 million international migrants with the largest proportion coming from Asia (41%) [65]. An estimated 3.5 million Nepali are working abroad, primarily in India, Malaysia and in the Middle East [65]. While many families have benefitted from the remittance that the migrants have earned, it has also resulted in family separation, affected child-rearing and fragmented the emotional and other support within the family [66]. In the present study, we found that migrant worker mother status was positively associated with child Externalizing Problems. However, no association was found for migrant worker fathers. A recent meta-analysis suggested that mental health and well-being of left behind children are not always negative and depend upon gender of the migrating parent, family norms, as well as other family characteristics [67]. While some South-East Asian countries showed negative effects of parental migration [68, 69], in other countries, left behind children were better off than non-left behind children [70, 71]. Perhaps, some unknown, resilience factors may have played a role, such as strong family- and social support mechanisms and increased family income which might have outweighed the negative impact.

Strengths and limitations of the study

This is a large-scale study demonstrating the association of several family determinants of child EBP in Nepal. Due to a large number of children from across the country, the study generates solid information and is the first of its kind in Nepal. Moreover, the participation rate of the study was high (99.5%). The validity of the study was further strengthened by thorough procedures and the collection of data by trained research assistants.

However, there are some limitations to the study. As this was a cross-sectional study and not a longitudinal study, we could not provide insight into cause-and-effect relationships. Further, the design of our study did not allow us to examine in more details the different mechanisms of the associations between family factors and child EBP.

The small effect sizes in the present study indicate that in addition to the family variables accounted for, other environmental- and child variables might be important to add to the model. It would have been helpful if we had included other potential risk factors for children's EBP such as domestic violence, child neglect and substance abuse. The control variables (child age, child gender and major life events) included in this study are also sparse. More complete

set of covariates would have given more accurate results and more precise assessment of the included family correlates.

Also, if the family function/ dysfunction had been objectively measured, it could have resulted in a more predictive measure. However, it would be difficult to manage objective, high quality measurement of family function/ dysfunction in a large sample like this as it would require extremely large resources.

As parents' reports were the sole source of information for both background data and data on child EBP, it is likely that our data had some reporting bias. For instance, parental responses may reflect the extent to which parents are socially aware of acceptable family functioning and child- rearing. Use of complementary methods of obtaining information such as using teachers and the child himself/herself as informants, as well as using qualitative data from parents and children, would have enriched and strengthened the validity of the results.

The instruments that we used in this study were in Nepali language. Although everyone in Nepal speaks Nepali, the indigenous ethnic groups in our study have their own languages which differ from the Nepali language. Language and cultural barriers might have affected the understanding and conception of certain words and meanings for some of the participants. If so, we do not know in what way this might have affected the results. Some of the variables that were used as correlates might not have been precise enough to accurately measure the specific topics under investigation. For some variables, additional questions might have been posed to make more valid constructs. For instance, we lacked data on the onset, course, and outcome of parental illness. Limited research data in this area have resulted in inconclusive results regarding how patterns of parental illness are associated with child outcomes [30]. As for the family structure variable, adding questions on whether additional help was provided for single mothers by other family members, and questions about the additional presence of elderly family members in poor health requiring extra assistance, might have increased the validity of the variable. Finally, the prevalence for some of the dichotomous variables were low, which makes some of the variables less powerful in establishing associations. This might have affected some of the results.

Clinical implications

This study provides new knowledge about environmental risk factors of child EBP in Nepal which may have implications for both clinical and preventive mental health work. In child psychiatric work, knowledge about possible risk factors in the child's family and social environment and how to integrate such knowledge in the assessment and treatment of the child, is paramount for problem solving. Hence, clinicians should routinely ask about family environment when trying to understand or assist children with internalizing or externalizing behavior problems. While genetic and biological factors may also be implicated in child EBP, current research, like the present study, establishes the importance of family factors. Hopefully, studies like ours might increase clinicians' awareness of family factors' influences on child EBP.

Future research

Future empirical studies focusing on EBP in Nepal should investigate more into environmental risk and protective factors related to EBP. This will provide useful insights into risk factors and identify vulnerable groups of children, which are essential as a basis for the prevention of child mental health. As mentioned above, future studies should explore more detailed into the different risk factors such as family structure, migrant worker parents, parental illness, family conflict mechanisms, and parenting. Studies measuring family variables more objectively and thoroughly, possibly with more than one source of informants of family functioning, are

warranted. In addition, other environmental risk factors for child EBP not included in the present study, should be investigated. Further, future longitudinal studies on correlates of child EBP may provide insight into cause-and-effect relationships. Finally, inter-rater comparisons of child EBP are recommended due to the contextual variability in children's behavior. Till date, no such studies have been performed in Nepal.

Conclusion

Similar to other countries, child EBP in Nepal is associated with several family risk factors. A positive correlation was found for factors such as parental education level, family structure, parental psychopathology, physical illness in parents, elevated level of conflicts in the family, parental disagreement in child-rearing, and harsh child-rearing control methods like physical punishment. Overall, the effect sizes were small in our study. Contrary to what was expected, we found no significant association between child EBP and migrant worker father status. Further studies are warranted to confirm some of the results.

Supporting information

S1 File.
(SAV)

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Teacher reports of emotional and behavioral problems in Nepali schoolchildren: to what extent do they agree with parent reports?

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Abstract

Background: Teacher reports of child emotional and behavioral problems (EBPs) are sparse in many low- and middle-income countries, especially when compared to reports from parents. Cross-informant information is pivotal to clinicians when dealing with mentally ill children. In this study from Nepal, we examined teacher reports of child EBPs, the agreement between teacher and parent reports, and how this agreement varied by type of EBP and child gender.

Methods: This cross-sectional, observational study included 3808 schoolchildren aged 6–18 years from 16 districts of Nepal. Teacher and parent reports of EBPs were measured by the Nepali versions of the Teacher Report Form (TRF) and the Child Behavior Checklist (CBCL), respectively. Linear mixed model analysis was used for group comparisons and intraclass correlations. Agreement between TRF and CBCL scale scores were analyzed using Pearson's correlation coefficient.

Results: The prevalence of EBPs according to teacher reports was 15.4%, whereas the previous parent reported prevalence was 19.1%. Also, the mean TRF score was significantly lower than mean CBCL score for the 90 common items. Mean TRF scores for Total Problems, Externalizing Problems, and Internalizing Problems were 26.9 (standard deviation, SD 24.5), 6.1 (SD 7.2), and 7.9 (SD 7.3), respectively. Consistent with parent reports, mean TRF scores for Total Problems and Externalizing Problems were higher among boys than girls, whereas no significant gender differences were found for Internalizing Problems. Teacher-parent agreement was moderate ($r = .38$), and slightly higher for Externalizing Problems than for Internalizing Problems ($r = .37$ versus $r = .34$). Moderate to low correlations were found for all syndrome scales, with coefficients ranging from $r = .26$ (Social Problems) to $r = .37$ (Attention Problems). The effect of child gender on the teacher-parent agreement was significant for Internalizing Problems only, with a higher agreement for girls than for boys.

Conclusion: Nepali teachers reported fewer child EBPs than parents. Teacher-parent agreement was moderate and varied by type of EBP and child gender. Our findings underscore the importance of obtaining information on child EBPs from both parents and teachers when evaluating and treating children in low- and middle-income countries like Nepal.

Keywords: Cross-informant, Teacher, Nepal, Children, Emotional and behavioral problems

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Background

Parents and teachers are common, important sources of information when assessing children's emotional and behavioral problems (EBPs) [1]. Parents are important

because they are familiar with the child's behavior across many situations. Teachers are important because children spend a significant number of hours in school, thus teachers have ample time and opportunity to observe students' behavior in a structured environment that is different from their home setting, and make comparisons among children of similar ages [2]. Because teachers can usually be reached relatively easily, their ratings of children's behavioral problems are often used [3]. Although frequently used worldwide, teacher reports are still sparse in the low-and-middle-income countries (LMIC), and even more sparse when it comes to comparing teacher reports to parent reports. However, teachers' observations are likely to vary based on the type of problems being rated (e.g., externalizing or internalizing problems) and the demographic characteristics of their students (e.g., gender, ethnicity, parental educational level) [4–6].

A meta-analysis by Rescorla and colleagues included studies from 21 countries that used the Teacher Report Form (TRF) to assess teacher reports of EBPs. It demonstrated that 15 of the 21 studies reported mean TRF scores for Total Problems within 1.0 standard deviation (SD, 6.2) of the overall mean of 21.6 [7] showing that despite differences across countries in their school systems, models of teaching, and perception of child problems, the mean TRF total scores were rather similar across many countries. The same meta-analysis showed that gender effects in teacher reports of EBPs were consistent across countries for Externalizing Problems and Attention Problems, with boys scoring significantly higher than girls in most countries. No large-scale studies on teacher reports of EBPs in Nepal have yet been published in the international literature [8]. Hence, the severity of child and adolescent EBPs as perceived in a school situation is still not known. Because children's behavior is often situation-specific, the evaluation of their emotional and behavioral functioning in different social situations is an important and challenging part of clinical psychiatric assessment [9]. The gathering of information from multiple sources (e.g., teachers and parents), and settings (e.g., classroom and home) is considered best practice and is highly recommended to achieve a comprehensive picture [10–12]. Although the importance of using multiple sources of information when assessing child EBPs has been recognized worldwide, there has been little systematic research on teacher versus parent reports of child EBPs in LMICs. Studies from many countries have shown that differences in school structure (e.g., class size), parental involvement in school, as well as cultural differences in parent perceptions of child problems might impact the teacher-parent agreement on child EBPs [1]. However, the impact of such factors in LMICs might differ substantially from those in high-income-countries (HIC), and more studies from LMICs are warranted to explore potential differences and possible consequences.

Earlier studies have shown that parents tend to report more child EBPs than teachers. Studies of teacher and parent reports of EBPs, as measured by the TRF and the Child Behavior Checklist (CBCL), respectively, found that parents tended to report higher scores than teachers on all problem scales [13]. More recent studies comparing teachers' and mothers' ratings of the different types of EBPs arrived at similar conclusions [1, 14–16]. Studies from different countries have found low to moderate teacher-parent agreement on EBPs for the same child. A meta-analysis validity study from 2015, which included 341 studies worldwide, reported low to moderate cross-informant correspondence estimates (mean internalizing: $r = 0.25$; mean externalizing: $r = 0.30$; mean overall: $r = 0.28$) [17]. According to most studies, teacher-parent agreement was higher for externalizing problems than for internalizing problems [1, 18, 19]. This could be because externalizing problems are more visible and thus more likely to be noticed by both parents and teachers, resulting in more consistent ratings across different contexts [18, 20, 21].

Interestingly, results on the influence of child gender on teacher-parent agreement are inconsistent: some studies suggest that this agreement is not affected by child gender [22–24], while others have found that child gender does affect the agreement [1, 4, 14, 18, 25, 26]. Results on the impact of gender on cross-informant agreement also vary, with some studies reporting a higher teacher-parent agreement for girls [14, 18], and others reporting a higher agreement for boys [4, 25]. This inconsistency might be due to differences in the age groups studied, the use of different instruments, or comparisons of different problem scales. Cultural context might also affect cross-informant agreement for girls and boys [19].

At present, large-scale studies on teacher reports of EBPs are still sparse in low- and middle-income countries like Nepal [8]. Hence, the prevalence and magnitude of child and adolescent EBPs as perceived in a school situation is largely unknown. Moreover, no study has yet been performed in a Nepali cultural context on the effect of child gender on teacher-parent agreement. The aims of the present study were to examine the prevalence and magnitude of child EBPs in Nepal as reported by teachers, including different types of problems and possible gender differences. Further, to explore the agreement between teacher and parent reports, and how this agreement varied by type of EBP and child gender.

Methods

This study presents information on teacher reports collected during a larger research project on the examination of EBPs of Nepali children from different castes and ethnic groups. The distribution of demographic data of the sample and the parent reports of EBPs have already been described in previous papers [27, 28].

Participants and procedure

Within the framework of the research project, we purposively selected 16 districts from the three main ecological/geographical regions of Nepal, based on convenience and feasibility (three districts from the Mountain region, six districts each from the Middle Hills and the Tarai regions, and the Kathmandu district). We then purposively selected two governmental schools and two private schools from each district. Schools for children with special needs and faith-based schools were not included. Six students (three boys and three girls) from each grade level (grades 1–10) were then randomly selected using random number tables. Children who appeared in the school registration system, but were not attending the school, were not included. If schools did not have six children per grade, as was the case for some rural schools, we selected the remaining students needed from another, similar, nearby school in the same district. Thus, in each of the 16 districts, 240 children were selected, which gave a total of 3,840 children. The selection procedure has been reported in more details in previous papers [27, 28].

Twenty research assistants with a bachelor's degree in education/psychology were responsible for data collection, supervised by seven field supervisors with a master's degree in education or psychology and experience in data collection. Before commencing data collection, all research assistants and field supervisors attended an intensive, 3-day training program administered by the first author, during which attendees received instruction on the research project and instruments, their role and responsibilities, and thorough training in how to inform teachers and parents about the study, how to answer queries that might arise, and how to assist teachers and parents in completing the study forms. Throughout the data collection period, the work was monitored by the first author using frequent telephone check-ins, SKYPE meetings, and direct visits to the different districts.

After the schools were selected, research assistants met with and obtained written consent from school administrators. Research assistants and school administrators then held meetings with all teachers of students in grades 1–10 to inform them about the study. School administrators provided the parents of selected children with oral and written information and invited them to participate in the study. Teachers completed the Nepali version of the TRF for children aged 6–18 years (TRF/6–18) for the selected students in their class, and parents completed the Nepali version of the 2001 CBCL for children aged 6–18 years (CBCL/6–18). Research assistants collected data from the TRF and CBCL between September 2017 and January 2018. Data plotting was done manually during the first half of 2018 by three research assistants, supervised by the first author.

Out of 3840 selected students, 20 did not participate in the study, and 12 had missing information on the TRF. Thus 3808 students were included in the present analysis (99.2%).

Measures

Both the TRF and the CBCL are included in the *Achenbach System of Empirically Based Assessment* (ASEBA) [29] and have been translated and adapted into the Nepali language by a Nepali researcher [30]. Both instruments have 118 specific problem items, which are scored on a three-point Likert scale (0 = absent, 1 = occurs sometimes, 2 = occurs often), plus two open-ended problem items. The TRF is based on the child's functioning over the preceding 2 months, whereas the CBCL covers functioning over the preceding 6 months. Most of the items on the TRF have counterparts on the CBCL (90 common items, TRF_{90}, $CBCL_{90}$), but the CBCL items that teachers cannot assess (e.g., "have nightmares") are replaced with items on behaviors they can observe (e.g., "disrupts class discipline").

In both instruments, the problem items combine to form eight syndrome scales: Withdrawn/Depressed, Somatic Complaints, Anxious/Depressed, Rule-breaking Behavior, Aggressive Behavior, Social Problems, Attention Problems, and Thought Problems. There are some differences between the problem items that comprise the syndrome scales in the two instruments, the main one being in the Attention Problems scale, for which the TRF includes 26 items and the CBCL 10 items. Some of the syndrome scales are further condensed into two broad-band scales: Internalizing Problems (Withdrawn/Depressed, Somatic Complaints, and Anxious/Depressed) and Externalizing Problems (Rule-breaking Behavior and Aggressive Behavior). Finally, the Total Problems scale comprises all eight syndrome scales.

The internal consistency of the two instruments has been reported to be good across countries, with Cronbach's alphas for the syndrome scales ranging from 0.72 to 0.95 on the TRF and from 0.72 to 0.94 on the CBCL [31]. Our previously published study showed that the alphas for the CBCL syndrome scales had overall good internal consistency [27]. The alphas for the TRF syndrome scales in the present study were: Anxious/Depressed: 0.80; Withdrawn/Depressed: 0.79; Somatic

Complaints: 0.78; Social Problems: 0.74; Thought Problems: 0.74; Attention Problems: 0.91; Rule-Breaking Behavior: 0.74; and Aggressive Behavior: 0.89.

Statistical analyses

SPSS statistics version 26.0 for Windows was used for all analyses. All CBCL information about prevalence and magnitude was taken from our previous paper [27]. To examine the prevalence rates of EBPs as reported by teachers, we used cut-off scores between the normal, borderline, and clinical groups based on American norms as described by Achenbach and Rescorla [31]. Since children are nested within grades and schools, linear mixed model (LMM) analysis was used for group comparisons of TRF scale scores. To measure the relative magnitude of the differences between means, i.e., the effect size, we calculated Cohen's *d* [32]. Comparisons between genders on normal, borderline, and clinical status for the teacher data were computed using generalized LMM (GLMM; multinomial distribution, cumulative logit link function, random intercepts on both the class and the school level). Intraclass correlations (ICCs) of child EBPs among grades within schools (grade level) and among schools (school level) were computed using LMM via an unconditional means model [33]. ICCs are helpful to reveal dependency in the data among schools and grades within schools. A high ICC indicates high similarity between values from the same group. Comparisons of mean scores for the TRF_{90} and $CBCL_{90}$ were analyzed using repeated-measures analysis of variance (rANOVA) [34]. For the rANOVA, we reported partial eta squared as an effect size measure. Partial eta square gives the proportion of the variance explained by a variable after accounting for other variables. In a model with just the informant (within-subject) variable, the partial eta squared is the proportion of the total variance explained by the informant variable.

Correlation between the TRF scale scores and the CBCL scale scores (teacher-parent agreement) was analyzed using Pearson's correlation test. A Fisher Z-transformation was used to compare teacher-parent agreement between boys and girls. Here we applied the effect size measure q for guidance about the magnitude of the correlation difference [32]. In addition, we computed Q correlations as Spearman correlations for each child to assess the within-child association between teacher and parent scores on the TRF_{90} and the $CBCL_{90}$, as recommended in the ASEBA manual [31]. The Q correlations are an alternative way of assessing cross-informant associations. Instead of testing the associations between scale scores for teachers, parents, and all participants combined, Q correlations use the TRF_{90} and $CBCL_{90}$ to assess the associations of scores for each child. The Q correlation then shows how consistent the 90 items are, scored for a particular child. The significance level used for all tests was 0.005. We decided to use a low significance level because of the large sample size [35].

Results

As in our previous study on parent reports of EBPs (reported using the CBCL) [27], in the present study on teacher reports, the majority of children had normal TRF scores for Total Problems, Internalizing Problems, and Externalizing Problems and this proportion was higher than for the CBCL. Prevalence of teacher reports of EBPs was 15.4%, compared to 19.1% for parent reports (Table 1). To examine the prevalence rates of EBPs, we used cut-off scores between the normal, borderline, and clinical groups based on American norms as described by Achenbach and Rescorla [31].

Intraclass correlations

The computations are based on a 3-level model where students (level1) are nested within grades (level 2) within schools (level 3). ICCs on the school level ranged from 0.10 to 0.16, indicating relatively large differences in problem means among schools. The ICCs on the grade level within schools were less than 0.02, and mostly smaller than 0.01. So the scores depended more on the school that children attended than on the grade they were in within the school (Table 2).

The magnitude of teacher reports of emotional and behavioral problems for boys and girls

Because of high ICCs on the school level, we did a multilevel LMM analysis when comparing the genders. Significant differences between the genders were observed in mean TRF scores for all scales except Internalizing Problems, Somatic Complaints, and Withdrawn/Depressed. Boys had a significantly higher TRF score for the Total Problems scale than girls, mainly because of higher scores for the Externalizing Problems and Attention Problems scales. The effects of gender were mostly small; the largest effect was observed for the Rule-Breaking Behavior scale (standardized effect size: − 0.32) (Table 3).

Comparison of mean scores for the 90 common items on the Teacher Report Form and Child Behavior Checklist

A repeated-measures ANOVA showed that the mean TRF_{90} score was significantly lower than the mean $CBCL_{90}$ score. The partial eta squared of 0.048 gives the effect of the difference between the informants (Table 4).

Table 1 Prevalence of emotional and behavioral problems for boys and girls as reported by teachers (parent reports to the right for comparison)

TRF	Gender			CBCL[a]	Gender		
	Boys	Girls	Total		Boys	Girls	Total
Total Problems T score***				***Total Problems T score***			
Normal (< 60)	81.0%	71.1%	76.1%	Normal (< 60)	68.7%	71.5%	70.1%
Borderline (60–63)	6.6%	10.5%	8.5%	Borderline (60–63)	11.2%	10.4%	10.8%
Clinical (> 63)	12.4%	18.4%	15.4%	Clinical (> 63)	20.1%	18.1%	19.1%
Internalizing problems T score				***Internalizing problems T score****			
Normal (< 60)	68.3%	66.8%	67.5%	Normal (< 60)	61.9%	66.9%	64.4%
Borderline (60–63)	8.0%	9.2%	8.6%	Borderline (60–63)	12.7%	10.3%	11.5%
Clinical (> 63)	23.7%	24.0%	23.9%	Clinical (> 63)	25.4%	22.8%	24.1%
Externalizing problems T score**				***Externalizing problems T score****			
Normal (< 60)	78.0%	72.6%	75.3%	Normal (< 60)	76.5%	80.3%	78.4%
Borderline (60–63)	10.3%	10.1%	10.2%	Borderline (60–63)	7.9%	6.8%	7.4%
Clinical (> 63)	11.8%	17.3%	14.5%	Clinical (> 63)	15.6%	12.9%	14.2%

TRF Teacher Report Form, *CBCL* Child Behavior Checklist

* $P < 0.05$; ** $P < 0.005$; *** $P < 0.0005$

[a] Data taken from reference [27]

Table 2 Intraclass correlations (ICCs) for Teacher Report Form (TRF) scale scores by grade level and school level

TRF scales	ICC grade[a]	ICC school[b]
Total Problems	0.006	0.160
Externalizing	0.004	0.114
Internalizing	0.013	0.160
Aggressive Behavior	0.002	0.105
Rule-breaking Behavior	0.008	0.102
Attention Problems	0.003	0.124
Thought Problems	0.003	0.103
Social Problems	0.004	0.126
Somatic Complaints	0.013	0.159
Withdrawn/Depressed	0.004	0.111
Anxious/Depressed	0.019	0.147

[a] The proportion of the total variance among grades within schools

[b] The proportion of the total variance among schools

Teacher-parent agreement for scale scores and the effect of gender

Moderately positive and significant agreement was found between all TRF and CBCL problem scales. The largest cross-informant *r*s were for Attention Problems ($r = 0.37$) and Externalizing Problems ($r = 0.37$). We found a significant gender effect only for Internalizing Problems ($z = -2.87$; $p = 0.004$), with a higher agreement for girls than for boys. No gender effects were found for any of the syndrome scales. All differences in agreement between genders were small with effect sizes $q < 0.10$ (Table 5).

In the 2001 ASEBA manual, the mean Q correlation for comparing individual CBCL and TRF data is given as 0.23 [30]. We found a mean correlation of 0.19, which is slightly below this reference sample mean. The mean Q correlation of 0.19 indicates low agreement in ratings (Fig. 1).

Discussion

This study assessed the prevalence and magnitude of teacher reports of EBPs among schoolchildren in Nepal and is the first study to investigate teacher-parent agreement on child EBPs in Nepal. The prevalence of EBPs reported by teachers was found to be 15.4% which is lower than the previous parent reported prevalence of 19.1% [27]. Also, the mean TRF_{90} score of Total Problems was lower than the CBCL $_{90}$ score which is consistent with findings from other international studies [1, 14]. Similar to the previously reported prevalence by the parents [27], teachers reported a higher prevalence of internalizing problems than externalizing problems (23.9% versus 14.5%). We do not know the reason for the higher internalizing problems in our study and more studies are warranted to explore possible cultural reasons.

Based on data from 21 societies, Achenbach and Rescorla constructed different norm groups (high, medium, and low) for the TRF. When they averaged the TRF scores for Total Problems, they observed an omni-cultural mean of 21.6 (SD 6.2) [7]. Nepal has not yet been ranked based on these norm groups due to the lack of internationally published scientific studies. However, the TRF mean score for Total Problems of 26.9 (SD 24.5) that

Table 3 Mean overall and gender-specific Teacher Report Form (TRF) scale scores for Nepali schoolchildren

TRF scales	Gender				
	Boys (*N* = 1913) Mean[a] (SD)	Girls (N = 1895) Mean (SD)	Total (IN = 3808) Mean (SD)	Gender effect F	Effect size[b]
Total Problems	29.09 (25.63)	24.60 (23.19)	26.85 (24.54)	37.87***	−0.18
Externalizing Problems	7.13 (7.85)	5.15 (6.36)	6.14 (7.21)	82.02***	−0.28
Internalizing Problems	7.70 (7.12)	8.18 (7.55)	7.94 (7.34)	4.70*	0.06
Aggressive Behavior	4.65 (5.50)	3.47 (4.67)	4.06 (5.13)	55.89***	−0.23
Rule-Breaking Behavior	2.49 (2.81)	1.68 (2.11)	2.09 (2.52)	111.71***	−0.32
Attention Problems	9.13 (8.12)	6.87 (7.10)	8.00 (7.71)	94.15***	−0.30
Thought Problems	1.30 (2.05)	1.07 (1.81)	1.19 (1.94)	13.89***	−0.12
Social Problems	2.62 (2.79)	2.28 (2.58)	2.45 (2.70)	17.05***	−0.13
Somatic Complaints	1.32 (2.10)	1.48 (2.22)	1.40 (2.16)	5.86*	0.07
Withdrawn/Depressed	2.32 (2.60)	2.31 (2.64)	2.32 (2.62)	0.03	−0.01
Anxious/Depressed	4.07 (3.76)	4.40 (4.06)	4.23 (3.91)	8.01**	0.08

SD: Standard deviation

* $P < 0.05$; ** $P < 0.005$; *** $P < 0.0005$

a. The table shows estimated marginal means

b. Negative effect size means higher scores for boys

Table 4 Comparison of mean scores for the 90 common items on the TRF and CBCL (TRF_{90} and $CBCL_{90}$)

TRF_{90} score Mean (SD)	$CBCL_{90}$ score Mean (SD)	F	Partial Eta Squared
19.25 (17.76)	24.08 (20.49)	190.70***	0.048

*** $P < 0.0005$. F: within-subject effect

we observed suggests that Nepal should be placed within the group of medium-scoring countries.

Similar to findings from the meta-analyses by Rescorla et al. [1, 7], the present study showed that teacher reported scores for Total Problems and Externalizing Problems were significantly higher for boys than girls. Contrary to the Rescorla et al. studies, gender differences were not significant for Internalizing Problems. Girls had more internalizing problems than boys in most countries, but we saw no gender difference in this study. However, gender differences in teacher reports of EBPs were in

Table 5 Teacher-parent agreement and the effect of gender

Scales	Pearson's correlation	Correlation for boys	Correlation for girls	Z test [Ω]	Effect size q[a]
Total Problems	0.38 **	0.36	0.40	−1.16	0.04
Externalizing Problems	0.37 **	0.37	0.35	0.83	0.03
Internalizing Problems	0.34 **	0.30	0.38	−2.87**	0.09
Aggressive behavior	0.33 **	0.33	0.31	0.65	0.02
Rule-Breaking behavior	0.36 **	0.37	0.30	2.45	0.08
Attention Problems	0.37 **	0.35	0.39	−1.52	0.05
Thought Problems	0.29 **	0.27	0.31	−1.24	0.04
Social Problems	0.26 **	0.25	0.26	−0.40	0.01
Somatic Problems	0.33 **	0.31	0.36	−1.49	0.05
Withdrawn/ Depressed	0.28 **	0.25	0.32	−2.22	0.07
Anxious/ Depressed	0.28 **	0.24	0.31	−2.44	0.08

* $P < 0.05$; ** $P < 0.005$; *** $P < 0.0005$

[Ω] The Z is a test statistic used to test for gender differences for the correlations; a. effect size $q = |z_1 - z_2|$, where $z_i = .5*\ln((1 + r_i)/(1\text{-}r_i))$, and r_1 represent the correlation for boys and r_2 represent the correlation for girls

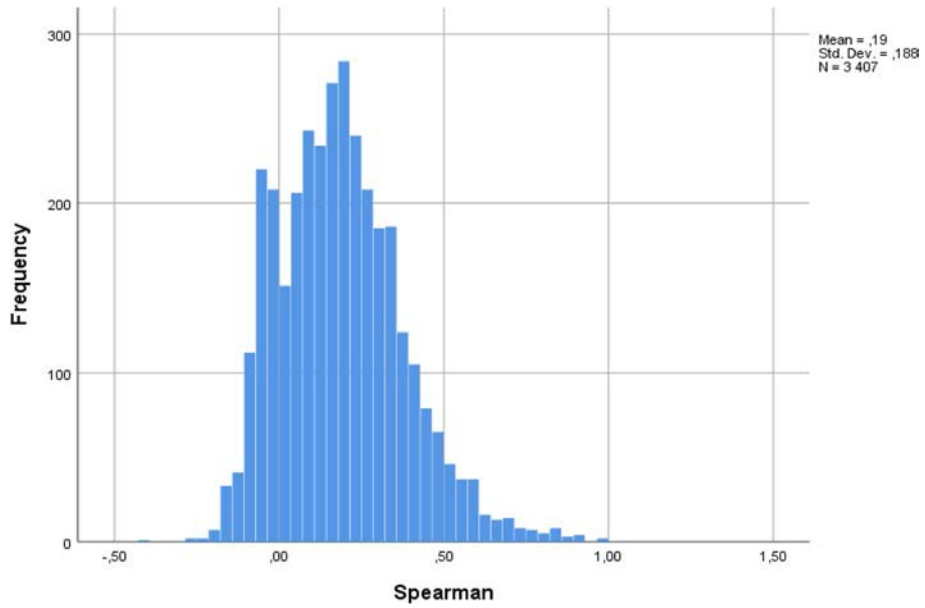

Fig. 1 Within-child association between teacher and parent scores on the TRF_{90} and the $CBCL_{90}$ (Spearman correlations for each child)

line with those seen in the parent reports in our previous study of the same sample [27].

Our study showed that the teacher-parent agreement on scale scores for the same child was low to moderate, which is in line with most other studies [1, 3, 14]. The discrepancy between teacher and parent reports might be due to different observation contexts. Indeed, children's behavior may vary in the home and at school, which may give rise to a lack of consistency in many cases [3]. Another possible explanation for the discrepancy in reports might be that parents and teachers have different emotional relationships with children and different expectations of their behavior [36]. Equally important, as noted by De Los Reyes, parents and teachers may have different "decision thresholds" for considering a child's behavior as problematic or deviant [10]. As suggested by some studies, one reason for the lower frequency of teacher reports of EBPs may be that teachers are more familiar with age-appropriate behaviors, and therefore more tolerant towards certain behavioral problems than parents [3, 4]. Lower ratings might also be due to the fact that teachers look after a larger number of children, which may make it difficult for them to discern individual children's problems. With large class sizes, teachers cannot be fully aware of their students' behavior, which might affect their ratings, and consequently, teacher-parent agreement [21]. In their large-scale study of children from 21 countries, Rescorla and colleagues found that large class size was the one characteristic most associated with lower levels of parent-teacher agreement. Children from the largest classes (i.e., 40 children) tended to have a low parent-teacher agreement ($r \leq 0.20$), whereas those from the smallest class sizes (15–25 students) had the highest agreement ($r = 0.49$) [1]. Many governmental schools in Nepal have large class sizes: up to 40 students per class. An additional explanation could be that the level of contact between parents and teachers in Nepal might be rather low, especially in rural areas. This might limit parents' and teachers' possibilities to share information about the child, which again might lead to lower levels of agreement on child EBP. Other studies have found that limited contact and shared information are associated with lower teacher-parent agreement [1]. However, the hypotheses mentioned above were not examined in the present study. Future research is warranted to explore in more detail the different mechanisms which may underlie cross-informant discrepancies in ratings in a Nepali context.

Consistent with previous studies [1, 4, 18, 21], our study suggested that the teacher-parent agreement was higher for externalizing than for internalizing problems. One explanation for this may be that internalizing problems are difficult for teachers to recognize, and that withdrawn/depressed behavior and anxiety are more likely to be observed by the parents. This argument might also be valid for our Nepali study. However, more detailed studies are needed to verify the hypothesis.

The highest teacher-parent agreement for the syndrome scales was found for Attention Problems. As

suggested by other studies, attention problems in children appear to be more stable across various contexts, such as home and school [18], which may cause higher teacher-parent agreement. However, there might be other reasons as well. In Nepal, parents strongly emphasize the importance of children's academic achievements in school and tend to regard attention problems as linked to academic difficulties. Thus, the frequency of contact between parents and teachers regarding attention problems might be higher than for other problems. Frequent communication between parents and teachers may, in turn, lead to a common understanding of problems, and subsequently, to a higher cross-informant agreement. An interesting topic in future Nepali studies might be to examine the frequency and content of the contact between parents and teachers on children's attention problems to see if such factors might impact the cross-informant agreement.

In the present study, we found a significant gender effect on teacher-parent agreement for internalizing problems, with an agreement that was higher for girls than boys. This finding is consistent with other international studies [1]. No gender effect was found for externalizing problems, which differs from many international studies that have reported a higher agreement for boys than for girls [1, 4, 21]. Different results across countries suggest the need to further examine child gender as a moderator of cross-informant agreement. We do not know why teachers and parents in Nepal agreed more on girls' internalizing problems. It is possible that girls with anxiety/depressed problems might display more consistent behaviors across different environments, leading parents and teachers to agree more on such symptoms. It may also be that teacher–child conflicts increase the discrepancy between problems reported by teachers and parents, and that teachers experience less conflicts with girls than boys. In Nepal, girls are subject to more control, are less likely to communicate their distress, and tend to behave in a more submissive manner than boys [37], which might create less conflicts with teachers. However, more Nepali studies are warranted to confirm this hypothesis and to examine other cultural factors that might account for variations in teacher-parent agreement.

Limitations of the study

This study has its limitations. One limitation is that we used the American norms as cut-offs for the TRF and CBCL, as Nepali norms for these instruments are still lacking. Without Nepali norms, the reported differences in the prevalence of externalizing and internalizing problems, and in girls and boys, may be inaccurate. Moreover, although the selection of children in each school was random, the purposive selection of districts and schools could have been a source of selection bias. Hence, we cannot claim that the results are representative of the whole country. Additional research on teacher-parent agreement in clinical samples in Nepal is needed to test the generalizability of our findings. Another limitation of this study is that data was collected from teachers and parents only, and not from the children themselves. It is widely acknowledged that children are the key informants and experts on their own lives, and their opinion should be asked when assessing their mental health needs [38]. Youths' self-reports might have broadened our understanding and identified more children who struggle with their emotions or behaviors. Finally, our data was informant data. Additional observational data would have granted us more certainty in determining whether the teacher-parent discrepancies reflected true differences in child behavior between school and home. It should be noted that the scope of this study did not include the examination of other socio-cultural or family factors that might have impacted teacher-parent agreement on child EBP.

Conclusion

The prevalence and magnitude of teacher reports of EBPs in Nepali children were similar to those found in other parts of the world. We found a lower level of EBPs compared to parent reports, and moderate parent-teacher agreement, which is in line with most international studies.

In a clinical setting, it is important to obtain information from different sources, such as teachers and parents, to systematically assess child problems. The present study provides more knowledge on teacher reports of child EBPs in Nepal and shows how child EBPs might vary in the school and home contexts. Hopefully, our findings will inspire clinicians to include different sources of information when assessing children admitted to mental health care services. This study may also be used as a springboard for future studies on the contextual factors that impact child EBPs in Nepal.

Abbreviations

EBP: Emotional and behavioral problems; TRF: Teacher Report Form; CBCL: Child Behavior Checklist; SD: Standard deviation; ASEBA: Achenbach System of Empirically Based Assessment; LMM: Linear mixed model; GLMM: Generalized linear mixed model; ICC: Intraclass correlations; ANOVA: Analysis of variance; CWIN: Child Workers in Nepal; FORUT: Solidarity Action for Development, Norway FORUT.

Supplementary Information

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Additional file 1.

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Authors' contributions
Jasmine Ma carried out the research planning, analysed the data and prepared the manuscript. Anne Cecilie Javo contributed to the analyses of data and supervised and reviewed the manuscript for intellectual content and made significant additions to the manuscript. Bjørn H. Handegård assisted on analysis and methological issues and reviewed the manuscript for important intellectual content. Siv Kvernmo, Per Håkan Brøndbo and Pashupati Mahat reviewed the manuscript and made significant changes including input and revision to the manuscript's text and content.. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and /or analysed during the current study are included in the supplementary information file.

Declarations

Ethics approval and consent to participate
Before commencing the study, ethical approval was obtained from the Ethical Review Board of Nepal Health Research Council (NHRC) (ref. no. 1875; reg, no: 71/2017). All methods were carried out in accordance with relevant guidelines and regulations. Informed consent was obtained from the parents of selected students. Both collection and storage of data were done according to the NHRC rules. The records from the study were kept strictly confidential and locked down; no persons other than the lead researcher had access. All electronic information was coded and secured using a password-protected file. All personally identifiable information has been removed from the data set, and no information will be shared or published that would make it possible to identify any participant.

Consent for publication
Not applicable, as individual details are not provided in this study.

Competing interests
There are no competing interests.

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Publisher's Note

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Nepal Health Research Council (NHRC)

Ref. No.: 1875

05 May 2017

Dr. Jasmine Ma

Principal Investigator
University of Tromsoe, Norway

Subject: Approval of research proposal entitled **Emotional and Behavioral Problems among Nepalese School Children: a National Level Epidemiological Study among Children from different Castes and Ethnic Groups**

Dear Dr. Ma,

It is my pleasure to inform you that the above-mentioned proposal submitted on **17 March 2017** (**Reg.no. 71/2017)** please use this Reg. No. during further correspondence) has been approved by NHRC Ethical Review Board on **26 April 2017**.

As per NHRC rules and regulations, the investigator has to strictly follow the protocol stipulated in the proposal. Any change in objective(s), problem statement, research question or hypothesis, methodology, implementation procedure, data management and budget that may be necessary in course of the implementation of the research proposal can only be made so and implemented after prior approval from this council. Thus, it is compulsory to submit the detail of such changes intended or desired with justification prior to actual change in the protocol before the expiration date of this approval. Expiration date of this study is **December 2019.**

If the researcher requires transfer of the bio samples to other countries, the investigator should apply to the NHRC for the permission. The researchers will not be allowed to ship any raw/crude human biomaterial outside the country; only extracted and amplified samples can be taken to labs outside of Nepal for further study, as per the protocol submitted and approved by the NHRC. The remaining samples of the lab should be destroyed as per standard operating procedure, the process documented, and the NHRC informed.

Further, the researchers are directed to strictly abide by the National Ethical Guidelines published by NHRC during the implementation of their research proposal and submit progress report and full or summary report upon completion.

As per your research proposal, the research amount is **NRs.9,94400.00** and accordingly the processing fee amount to **NRs.10,000.00.** It is acknowledged that the above-mentioned processing fee has been received at NHRC.

If you have any queries, please feel free to contact the Ethical Review M & E section of NHRC.

Thanking you,

Prof. Dr. Anjani Kumar Jha
Executive Chairman

Tel: +977 1 4254220, Fax: +977 1 4262469, Ramshah Path, PO Box: 7626, Kathmandu, Nepal
Website: http://www.nhrc.org.np, E-mail: nhrc@nhrc.org.np

Request to participate in the research study:

Emotional and behavioral problems among Nepalese school children: a national level epidemiological study among children from different ethnic groups

Purpose of the study

The purpose of this research study is to find out to what degree school children in Nepal have any kind of emotional and/or behavioral problems and also what kind of problems. It might give us new knowledge about the amount of child problems in the country and help us in the planning of how these children might be helped. Similar research has been done in many other countries around the world, and they have shown that many children do have problems. Previous studies in Nepal suggest that this might be the case in our country, too. This study will be a national based study, including all regions and ethnic / social groups. We might then find out whether there are differences between regions and between ethnic / social groups as to the amount and types of problems. This might be important in the planning of health services to the population.

How the study is being conducted and by whom

In order to examine children's problems, we will use questionnaires and collect reports both from parents and teachers. The reason is that problems might be experienced differently by different persons surrounding the child, such as parents and teachers. Participating children will be randomly selected from his/her class register, 10 children from each class. No other persons than the researcher / research assistant will select the participating children from the register.

Responsible for the research study is Dr. Jasmine Ma who is working as a consultant at the Child and Adolescent outpatient clinic at Kanti Children Hospital, Kathmandu. This study will be her doctorial dissertation at the University of Tromsoe, Norway, and will be supervised from that university. This will ensure that the work will be of high standard. Results from the study will be published as papers in international scientific journals. The study has been approved by the the Nepal Health Research Council (NHRC).

If you decide to participate in the study, you will be asked to fill in a questionnaire and answer questions regarding family background data, your child's leisure activities, school performances, and any emotional or behavioral problems that your child might experience.

You might fill in the questionnaires either at home or at your child's school. If you wish so, a research assistant will help you fill it in. All research assistants are health professionals who possess good knowledge and will get a special training in how to supervise you.

It might take you approximately half an hour – 30 minutes - to fill in the forms.

If you decide to participate in the study, you will be asked to allow your child's class teacher to answer similar questions (teacher's form). If you, by any reasons, do not allow the teacher to fill in a similar form, you can still participate in the study.

Finally, we will ask you to give your consent to participate in a similar, follow up study in some years from now in order to follow the children's development. If you do not want to participate later, you can still participate in this study.

Payment / Gift

You will be offered a gift with the completion of the forms, as a token of gratitude for spending your time on this project

Health care benefits of participating in the study

The health care benefit of participating in the study is that your child can be detected of any emotional or behavioral problems. If needed, your child will be offered medical and / or psychological help from Kanti Children's Hospital and the team of child psychiatrists / psychologists working there. This, of course, will be on a non-compulsory base and up to you to decide. If your child does not need any help, your participation will be valued all the same, as it will help make the study successful and lead to more awareness and prevention in school as to children's mental health problems.

Possible risks / discomfort of participating in the study

There are no reasonable, foreseeable or expected risks in participating in this study. However, some might feel some discomfort in thinking about problems they have. If so, they are free to contact the researcher / research assistant to talk about it.

Rights to refuse or withdraw from the study

The decision to participate in this study is entirely up to you. Your may refuse to take part in the study at any time without affecting your relationship with the investigators of this study or school teachers or losing benefits to which you are otherwise entitles.

Confidentiality

The records from this study will be kept strictly confidential. Research data will be kept in a locked file and all electronic information will be coded and secured using a password protected file. No other persons than the researcher and research supervisors will have access to the data. We will not give out any information in any report that we may publish that would make it possible for anyone to identify you or your child.

Right to ask questions or report concerns

You have the right to ask questions about this research study before, during, or after the research. If you have any further questions about the study, at any time feel free to contact me, Dr. Jasmine Ma, by telephone at 9841755922, mail or letter. If you like, a summary of the result of the study will be sent to you on request.

Consent

Your signature below will show that you have decided to participate in this research study, and that you have read and understood the information provided above.

Yours sincerely,

Dr. Jasmine Ma,

Child- and Adolescent Outpatient Clinic,

Kanti Children Hospital, Kathmandu

(phone: 9841755922; mail: jasminema2006@yahoo.com)

CONSENT FORM

I hereby give my consent to participate in the research study: "*Emotional and behavioral problems among Nepalese school children: a national level epidemiological study among children from different ethnic groups*".
I have read the above description of the project and have understood its purpose, and that the information that I give will be held strictly confidential and not reported to anyone else. I can withdraw from the study at any stage if I change my mind and decide not to participate.

Date: Parent's / Guardian's name:

I hereby give my consent for my child's class teacher to participate in the above study in accordance with the information given above, and to fill in a similar questionnaire (Teacher Report Form).

Date: Parent's / Guardian's name:

I hereby give my consent to be contacted again after some years, to participate in a similar, follow-up study.

Date: Parent's / guardian's name:

ID number:

BACKGROUND INFORMATION

Date:

Mother's name:

Child's name:

Address (name of village/city):

Parent's telephone number:

Name of the child's school:_____

Living area:

Geographical area: Mountains ☐ Hills ☐ Terai ☐

Rural/Semi-urban/urban area: Rural ☐ Semi-urban ☐ Urban ☐

School:

Type of school: Government school ☐ Private school ☐

Class level: 1☐ 2☐ 3☐ 4☐ 5☐

6☐ 7☐ 8☐ 9☐ 10☐

Child's gender: Male ☐ Female ☐

Age:

Child's age: ☐

Mother's age: ☐

Education level:

Mother:

Primary level - Grades 1-5 (5-9 years)	☐
Lower Secondary level - Grades 6-8 (10-12 years)	☐
Secondary level - Grades 9-10(13-14 years)	☐
Higher Secondary level - Grades 11-12(15years and more)	☐
Bachelor Level	☐
Masters Level	☐

Father:

Primary level - Grades 1-5 (5-9 years)	☐
Lower Secondary level - Grades 6-8 (10-12 years)	☐
Secondary level - Grades 9-10(13-14 years)	☐
Higher Secondary level - Grades 11-12(15years and more)	☐
Bachelor Level	
Masters Level	

Illiteracy:

Mother: No ☐ Yes ☐

Father: No ☐ Yes ☐

Family structure: Single parent ☐ Nuclear family ☐ Extended family ☐

Size of household:

Number of members in the household (incl. child and parents): ☐

Number of siblings: ☐

Child's number among siblings: First born ☐ Middle ☐ Last born ☐

Employment status:

Mother: Employed ☐ Unemployed ☐

Father: Employed ☐ Unemployed ☐

Parent occupation:

Mother:

Housewife	☐
Public services	☐
Private business	☐

	Farmer	☐
	Migrant worker	☐
Father:	Public services	☐
	Private business	☐
	Farmer	☐
	Migrant worker	☐

Family annual income:

10,000-20,000	☐
20,000-30,000	☐
30,000-40,000	☐
40,000-50,000	☐
>50,000	☐

Home language: _____

Family health:

Physical illnesses in the family:

Mother:	Yes ☐	No ☐	If yes, explain:_____
Father:	Yes ☐	No ☐	If yes, explain: _____
Child:	Yes ☐	No ☐	If yes, explain:_____
Siblings:	Yes ☐	No ☐	If yes, explain:_____

Mental illnesses in the family:

Mother:	Yes ☐	No ☐	If yes, explain:_____
Father:	Yes ☐	No ☐	If yes, explain: _____
Child:	Yes ☐	No ☐	If yes, explain:_____
Siblings:	Yes ☐	No ☐	If yes, explain:_____

Family use of healers:

Do you use traditional healers to cure illnesses in the family?

Yes ☐ No ☐

Religion: Hindu ☐ Buddhist ☐ Muslim ☐ Christian ☐

Caste/Ethnicity:

1. Caste origin: Hill groups ☐
2. Hill Adibasi/Janajati groups ☐
3. Hill Low caste or Dalits ☐
4. Madhesi caste-origin groups (socio-economic level 1) ☐
5. Madhesi caste-origin groups (socio-economic level 2) ☐
6. Madhesi caste-origin groups (socio-economic level 3) ☐
7. Madhesi (Tarai) Adibasi/Janajati group ☐
8. Musalman (Muslim) ☐
9. Other cultural groups ☐

Life events / trauma:

Has the child experienced any serious life events or trauma during the past 12 months that might have affected it psychologically? Yes ☐ No ☐

If yes, describe:_____

Family life / child-rearing:

Has there been any conflicts between family members,

causing stress in the family,
during the past 6 months? Low level of stress ☐ Moderate level ☐ High level ☐

Do you as parents agree as to
child-rearing? Disagrees ☐ Somewhat agrees ☐ Highly agrees ☐

If your child misbehaves, what do you most often do to control the misbehavior?

Punish the child physically ☐
Threaten to punish it ☐
Just explain why it should not do it ☐
Isolate the child in another room/place ☐
Withdraw privileges ☐
Other (explain) _____

Please print

CHILD BEHAVIOR CHECKLIST FOR AGES 6-18

For office use only
ID #

CHILD'S FULL NAME First Middle Last

CHILD'S GENDER ☐ Boy ☐ Girl

CHILD'S AGE

CHILD'S ETHNIC GROUP OR RACE

TODAY'S DATE Mo._____Day_____Year _____

CHILD'S BIRTHDATE Mo._____Day_____Year _____

GRADE IN SCHOOL _____

NOT ATTENDING SCHOOL ☐

Please fill out this form to reflect *your* view of the child's behavior even if other people might not agree. Feel free to print additional comments beside each item and in the space provided on page 2. ***Be sure to answer all items.***

PARENTS' USUAL TYPE OF WORK, even if not working now.
(Please be specific — for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)
PARENT 1 (or FATHER)
TYPE OF WORK _____
PARENT 2 (or MOTHER)
TYPE OF WORK _____

THIS FORM FILLED OUT BY: (print your full name)

_____

Your gender: ☐ Man ☐ Woman ☐ Other (specify)

Your relation to the child:
☐ Biological Parent ☐ Step Parent ☐ Grandparent
☐ Adoptive Parent ☐ Foster Parent ☐ Other (specify):

I. Please list the sports your child most likes to take part in. For example: swimming, baseball, skating, skate boarding, bike riding, fishing, etc.

☐ None

a. _____

b. _____

c. _____

Compared to others of the same age, about how much time does he/she spend in each?

	Less Than Average	Average	More Than Average	Don't Know
a.	☐	☐	☐	☐
b.	☐	☐	☐	☐
c.	☐	☐	☐	☐

Compared to others of the same age, how well does he/she do each one?

	Below Average	Average	Above Average	Don't Know
a.	☐	☐	☐	☐
b.	☐	☐	☐	☐
c.	☐	☐	☐	☐

II. Please list your child's favorite hobbies, activities, and games, other than sports. For example: video games, dolls, reading, piano, crafts, cars, computers, singing, etc. (Do ***not*** include listening to radio, TV, or other media.)

☐ None

a. _____

b. _____

c. _____

Compared to others of the same age, about how much time does he/she spend in each?

	Less Than Average	Average	More Than Average	Don't Know
a.	☐	☐	☐	☐
b.	☐	☐	☐	☐
c.	☐	☐	☐	☐

Compared to others of the same age, how well does he/she do each one?

	Below Average	Average	Above Average	Don't Know
a.	☐	☐	☐	☐
b.	☐	☐	☐	☐
c.	☐	☐	☐	☐

III. Please list any organizations, clubs, teams, or groups your child belongs to.

☐ None

a. _____

b. _____

c. _____

Compared to others of the same age, how active is he/she in each?

	Less Active	Average	More Active	Don't Know
a.	☐	☐	☐	☐
b.	☐	☐	☐	☐
c.	☐	☐	☐	☐

IV. Please list any jobs or chores your child has. For example: doing dishes, babysitting, making bed, working in store, etc. (Include both paid and unpaid jobs and chores.)

☐ None

a. _____

b. _____

c. _____

Compared to others of the same age, how well does he/she carry them out?

	Below Average	Average	Above Average	Don't Know
a.	☐	☐	☐	☐
b.	☐	☐	☐	☐
c.	☐	☐	☐	☐

Be sure you answered all items. Then see other side.

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Please print. Be sure to answer all items.

V. 1. About how many close friends does your child have? (Do *not* include brothers & sisters)

☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

2. About how many times a week does your child do things with any friends outside of regular school hours? (Do *not* include brothers & sisters) ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

VI. Compared to others of his/her age, how well does your child:

	Worse	Average	Better	
a. Get along with his/her brothers & sisters?	☐	☐	☐	☐ Has no brothers or sisters
b. Get along with other kids?	☐	☐	☐	
c. Behave with his/her parents?	☐	☐	☐	
d. Play and work alone?	☐	☐	☐	

VII. 1. Performance in academic subjects. ☐ **Does not attend school because** _____

Check a box for each subject that child takes	Failing	Below Average	Average	Above Average
a. Reading, English, or Language Arts	☐	☐	☐	☐
b. History or Social Studies	☐	☐	☐	☐
c. Arithmetic or Math	☐	☐	☐	☐
d. Science	☐	☐	☐	☐
e. _____	☐	☐	☐	☐
f. _____	☐	☐	☐	☐
g. _____	☐	☐	☐	☐

Other academic subjects–for example: computer courses, foreign language, business. Do ***not*** include gym, shop, driver's ed., or other nonacademic subjects.

2. Does your child receive special education or remedial services or attend a special class or special school?

☐ No ☐ Yes—kind of services, class, or school:

3. Has your child repeated any grades? ☐ No ☐ Yes—grades and reasons:

4. Has your child had any academic or other problems in school? ☐ No ☐ Yes—please describe:

When did these problems start?

Have these problems ended? ☐ No ☐ Yes–when?

Does your child have any illness or disability (either physical or mental)? ☐ No ☐ Yes—please describe:

What concerns you most about your child?

Please describe the best things about your child.

Be sure you answered all items.

Please print. Be sure to answer all items.

Below is a list of items that describe children and youths. For each item that describes your child ***now or within the past 6 months***, please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the item is ***somewhat or sometimes true*** of your child. If the item is ***not true*** of your child, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 1. Acts too young for his/her age
0 1 2 2. Drinks alcohol without parents' approval (describe):

_____

0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts
0 1 2 5. There is very little he/she enjoys
0 1 2 6. Bowel movements outside toilet
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe):

_____

0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Cruel to animals
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Daydreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys things belonging to his/her family or others
0 1 2 22. Disobedient at home
0 1 2 23. Disobedient at school
0 1 2 24. Doesn't eat well
0 1 2 25. Doesn't get along with other kids
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Breaks rules at home, school, or elsewhere
0 1 2 29. Fears certain animals, situations, or places, other than school (describe):

_____

0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sound or voices that aren't there (describe):

_____

0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, highstrung, or tense
0 1 2 46. Nervous movements or twitching (describe):

_____

0 1 2 47. Nightmares
0 1 2 48. Not liked by other kids
0 1 2 49. Constipated, doesn't move bowels
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy or lightheaded
0 1 2 52. Feels too guilty
0 1 2 53. Overeating
0 1 2 54. Overtired without good reason
0 1 2 55. Overweight
56. Physical problems ***without know medical cause:***
0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe):
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe):

_____

Please print. Be sure to answer all items.

~~0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True~~

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe):
0 1 2 59. Plays with own sex parts in public
0 1 2 60. Plays with own sex parts too much
0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy
0 1 2 63. Prefers being with older kids
0 1 2 64. Prefers being with younger kids
0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe):
0 1 2 67. Runs away from home
0 1 2 68. Screams a lot
0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe):
0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Sets fires
0 1 2 73. Sexual problems (describe):
0 1 2 74. Showing off or clowning
0 1 2 75. Too shy or timid
0 1 2 76. Sleeps less than most kids
0 1 2 77. Sleeps more than most kids during day and/or night (describe):):
0 1 2 78. Inattentive or easily distracted
0 1 2 79. Speech problem (describe):
0 1 2 80. Stares blankly
0 1 2 81. Steals at home
0 1 2 82. Steals outside the home
0 1 2 83. Stores up too many things he/she doesn't need (describe):
0 1 2 84. Strange behavior (describe):
0 1 2 85. Strange ideas (describe):
0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings
0 1 2 88. Sulks a lot
0 1 2 89. Suspicious
0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self
0 1 2 92. Talks or walks in sleep (describe):
0 1 2 93. Talks too much
0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper
0 1 2 96. Thinks about sex too much
0 1 2 97. Threatens people
0 1 2 98. Thumb-sucking
0 1 2 99. Smokes, chews, or sniffs tobacco
0 1 2 100. Trouble sleeping (describe):
0 1 2 101. Truancy, skips school
0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud
0 1 2 105. Uses drugs for nonmedical purposes (***don't*** include alcohol or tobacco) (describe):
0 1 2 106. Vandalism
0 1 2 107. Wets self during the day
0 1 2 108. Wets the bed
0 1 2 109. Whining
0 1 2 110. Wishes to be of opposite sex
0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries
113. Please write in any problems your child has that were not listed above:
0 1 2
0 1 2
0 1 2

Please be sure you answered all items.

Please print

TEACHER'S REPORT FORM FOR AGES 6-18

For office use only
ID #

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The information from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free to print additional comments beside each item and in the spaces provided on page 2. ***Please print, and answer all items.***

PUPIL'S FULL NAME First Middle Last

PUPIL'S GENDER ☐ Boy ☐ Girl

PUPIL'S AGE

PUPIL'S ETHNIC GROUP OR RACE

TODAY'S DATE Mo.____Date____Year____

PUPIL'S BIRTHDATE (if known) Mo.____Date____Year____

GRADE IN SCHOOL _____

NAME AND ADDRESS OF SCHOOL

PARENTS' USUAL TYPE OF WORK, even if not working now.
(Please be specific —for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)

PARENT 1 (or father)
TYPE OF WORK _____

PARENT 2 (or mother)
TYPE OF WORK _____

THIS FORM FILLED OUT BY: ***(print your full name)***

Your gender: ☐ Man ☐ Woman ☐ Other (specify)

Your role at the school:
☐ Classroom Teacher ☐ Counselor ☐ Teacher's Aide
☐ Special Educator ☐ Administrator ☐ Other (specify):

I. For how many months have you known this pupil?_____months

II. How well do you know him/her? 1. ☐ Not Well 2. ☐ Moderately Well 3. ☐ Very Well

III. How much time does he/she spend in your class or service per week?

IV. What kind of class or service is it? (Please be specific, e.g., regular 5th grade, 7th grade math, learning disability, counseling, etc.)

V. Has he/she ever been referred for special class placement, services, or tutoring?

☐ Don't know 0. ☐ No 1. ☐ Yes — what kind and when?

VI. Has he/she ever repeated any grades? ☐ Don't Know 0. ☐ No 1. ☐ Yes - grades and reasons:

VII. Current academic performance — list academic subjects and check box that indicates pupil's performance for each subject:

Academic subject	1. Far below grade	2. Somewhat below grade	3. At grade level	4. Somewhat above grade	5. Far above grade
1. _____	☐	☐	☐	☐	☐
2. _____	☐	☐	☐	☐	☐
3. _____	☐	☐	☐	☐	☐
4. _____	☐	☐	☐	☐	☐
5. _____	☐	☐	☐	☐	☐
6. _____	☐	☐	☐	☐	☐

Be sure you answered all items. Then see other side.

Please print. Be sure to answer all items.

VIII. Compared to typical pupils of the same age:	1. Much less	2. Somewhat less	3. Slightly less	4. About average	5. Slightly more	6. Somewhat more	7. Much more
1. How hard is he/she working?	❒	❒	❒	❒	❒	❒	❒
2. How appropriately is he/she behaving?	❒	❒	❒	❒	❒	❒	❒
3. How much is he/she learning?	❒	❒	❒	❒	❒	❒	❒
4. How happy is he/she?	❒	❒	❒	❒	❒	❒	❒

IX. Most recent achievement test scores (optional):

Name of test	Subject	Date	Percentile or grade level obtained

X. IQ, readiness, or aptitude tests (optional):

Name of test	Date	IQ or equivalent scores

Does this pupil have any illness or disability (either physical or mental)? ❒ **No** ❒ **Yes — please describe:**

What concerns you most about this pupil?

Please describe the best things about this pupil:

Please feel free to write any comments about this pupil's work, behavior, or potential, using extra pages if necessary.

Please print. Be sure to answer all items.

Below is a list of items that describe pupils. For each item that describes the pupil ***now or within the past 2 months***, please circle the ***2*** if the item is ***very true or often true*** of the pupil. Circle the ***1*** if the item is ***somewhat or sometimes true*** of the pupil. If the item is ***not true*** of the pupil, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 1. Acts too young for his/her age
0 1 2 2. Hums or makes other odd noises in class
0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts
0 1 2 5. There is very little he/she enjoys
0 1 2 6. Defiant, talks back to staff
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe):_____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Fidgets
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Daydreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys property belonging to others
0 1 2 22. Difficulty following directions
0 1 2 23. Disobedient at school
0 1 2 24. Disturbs other pupils
0 1 2 25. Doesn't get along with other pupils
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Breaks school rules
0 1 2 29. Fears certain animals, situations, or places, other than school (describe): _____
0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sound or voices that aren't there (describe): _____
0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, highstrung, or tense
0 1 2 46. Nervous movements or twitching (describe): _____
0 1 2 47. Overconforms to rules
0 1 2 48. Not liked by other pupils
0 1 2 49. Has difficulty learning
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy or lightheaded
0 1 2 52. Feels too guilty
0 1 2 53. Talks out of turn
0 1 2 54. Overtired without good reason
0 1 2 55. Overweight

56. Physical problems ***without known medical cause:***

0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Eye problems (***not*** if corrected by glasses) (describe): _____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____

Please print. Be sure to answer all items.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe): _____

0 1 2 59. Sleeps in class
0 1 2 60. Apathetic or unmotivated

0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy

0 1 2 63. Prefers being with older children or youths
0 1 2 64. Prefers being with younger children

0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe): _____

0 1 2 67. Disrupts class discipline
0 1 2 68. Screams a lot
0 1 2 69. Secretive, keeps things to self
0 1 2 70. ~~Sees things that aren't there (describe):~~

0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Messy work

0 1 2 73. Behaves irresponsibly (describe): _____

0 1 2 74. Showing off or clowning
0 1 2 75. Too shy or timid
0 1 2 76. Explosive or unpredictable behavior

0 1 2 77. Demands must be met immediately, easily frustrated
0 1 2 78. Inattentive or easily distracted

0 1 2 79. Speech problem (describe): _____

0 1 2 80. Stares blankly

0 1 2 81. Feels hurt when criticized
0 1 2 82. Steals

0 1 2 83. Stores up too many things he/she doesn't need (describe): _____

0 1 2 84. Strange behavior (describe): _____

0 1 2 85. Strange ideas (describe): _____

0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings

0 1 2 88. Sulks a lot
0 1 2 89. Suspicious

0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self

0 1 2 92. Underachieving, not working up to potential
0 1 2 93. Talks too much

0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper

0 1 2 96. Seems preoccupied with sex
0 1 2 97. Threatens people

0 1 2 98. Tardy to school or class
0 1 2 99. Smokes, chews, or sniffs tobacco

0 1 2 100. Fails to carry out assigned tasks
0 1 2 101. Truancy or unexplained absence

0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed

0 1 2 104. Unusually loud
0 1 2 105. Uses drugs for nonmedical purposes (***don't*** include tobacco) (describe):

0 1 2 106. Overly anxious to please
0 1 2 107. Dislikes school

0 1 2 108. Is afraid of making mistakes
0 1 2 109. Whining

0 1 2 110. Unclean personal appearance
0 1 2 111. Withdrawn, doesn't get involved with others

0 1 2 112. Worries

113. Please write in any problems the pupil has that were not listed above.

0 1 2 _____
0 1 2 _____
0 1 2 _____

Please be sure you answered all items.