



Burden, risk factors, and comorbidities of behavioural and emotional problems in Kenyan children: a population-based study



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Summary

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See [Comment](#) page 89

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Background Three-quarters of the burden of mental health problems occurs in low-and-middle-income countries, but few epidemiological studies of these problems in preschool children from sub-Saharan Africa have been published. Behavioural and emotional problems often start in early childhood, and this might be particularly important in Africa, where the incidence of perinatal and early risk factors is high. We therefore aimed to estimate the prevalence and risk factors of behavioural and emotional problems in young children in a rural area on the Kenyan coast.

Methods We did a population-based epidemiological study to assess the burden of behavioural and emotional problems in preschool children and comorbidities in the Kilifi Health and Demographic Surveillance System (KHDSS, a database formed of the population under routine surveillance linked to admissions to Kilifi County Hospital). We used the Child Behaviour Checklist (CBCL) to assess behavioural and emotional problems. We then determined risk factors and medical comorbidities associated with behavioural and emotional problems. The strength of associations between the risk factors and the behavioural and emotional problems was estimated using generalised linear models, with appropriate distribution and link functions.

Findings 3539 families were randomly selected from the KHDSS. Of these, 3273 children were assessed with CBCL. The prevalence of total behavioural and emotional problems was 13% (95% CI 12–14), for externalising problems was 10% (9–11), and for internalising problems was 22% (21–24). The most common CBCL syndrome was somatic problems (21%, 20–23), whereas the most common DSM-IV-oriented scale was anxiety problems (13%, 12–14). Factors associated with total problems included consumption of cassava (risk ratio 5·68, 95% CI 3·22–10·03), perinatal complications (4·34, 3·21–5·81), seizure disorders (2·90, 2·24–3·77), and house status (0·11, 0·08–0·14). Seizure disorders, burn marks, and respiratory problems were important comorbidities of behavioural and emotional problems.

Interpretation Behavioural and emotional problems are common in preschool children in this Kenyan rural area and are associated with preventable risk factors. Behavioural and emotional problems and associated comorbidities should be identified and addressed in young children.

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Introduction

Behavioural and emotional problems are common in preschool children aged younger than 6 years in high-income countries.¹ These problems in preschool children are classified into two broad categories: externalising problems such as aggressive behaviour and internalising problems such as emotional disturbances.² Epidemiological and meta-analytic studies of behavioural and emotional problems in children often combine preschool estimates with those of older children, contributing to a scarcity of data in young children, particularly in Africa.³ Childhood behavioural and emotional problems increase the risk of mental health problems later in life,⁴ which could be prevented with early identification and management of these behavioural and emotional problems.

The prevalence of behavioural and emotional problems in high-income countries ranges from 3% to 40%.⁵ Estimates of behavioural and emotional problems

from the Middle East, Asia, and South America range from 10% to 30%.⁶ Some of these low-and-middle-income studies were based on hospital samples,⁶ which are biased towards greater morbidity. No reliable epidemiological studies of behavioural and emotional problems in preschool children from Africa have been published, which affects planning for preventive and therapeutic interventions such as the Triple P-positive Parenting Programme for parents.⁷ Identification of behavioural and emotional problems in preschool children from low-and-middle-income countries is challenging because these children are developing rapidly, and few tools exist to assess these problems.⁸

Behavioural and emotional problems in high-income countries⁹ are associated with risk factors such as pregnancy and perinatal factors, social disadvantage, family factors, and environmental factors, which can be addressed through public health interventions and social

Research in context

Evidence before this study

We searched PubMed for all English articles published up to Aug 31, 2016, using the terms “behavioural and emotional problems”, “mental health problems/disorders”, “externalising problems/disorders”, “internalising problems/disorders”, and “preschool/young children”, “infants”. Most studies of behavioural and emotional problems in preschool children were from high-income countries, with few from low-and-middle-income countries of the Middle East, Asia, and South America. There were no studies from Africa. Most studies were done after the year 2000 suggesting a recognition of the need to understand behavioural and emotional problems in preschool children. The prevalence ranged from 3% to 40% in high-income countries, and 10% to 30% in low-and-middle-income countries, although some studies from low-and-middle-income countries were hospital based. The high-income country studies identified antenatal or perinatal complications, social disadvantages, environmental factors, and family factors as the risk factors for behavioural and emotional problems. The commonest comorbidities of behavioural and emotional problems were sleep problems, upper respiratory problems, and seizures.

Added value of this study

This study provides robust evidence of the high burden of behavioural emotional problems in preschool children from a rural area on the Kenyan coast, and identifies seizure disorders, perinatal complications, and lifestyle factors such as consumption of cassava and soil as the most important risk factors. Most of these risk factors are easily preventable. Medical comorbidities such as seizures, burns, and respiratory infections were more frequent in those with behavioural and emotional problems than those without.

Implications of all the available evidence

Preschool children experience a high burden of behavioural and emotional problems similarly to older children; these problems should be assessed and addressed, alongside the associated medical comorbidities. Control of causes and risk factors for seizure disorders might reduce the burden of behavioural problems in this rural area of Kenya. The mental health problems should be addressed before children go to school.

policy change. Most of these risk factors are very common in Africa, where they could contribute to the burden of behavioural and emotional problems in young children. Behavioural and emotional problems co-occur with febrile seizures (in 20% of young children),¹⁰ malnutrition, and sleep problems.¹¹ These comorbid conditions have not been examined in African countries.

We did an epidemiological study to estimate the prevalence and risk factors of behavioural and emotional problems in young children in a rural area on the Kenyan coast. Clinical examination was done on a random sample to identify the medical comorbidities of behavioural and emotional problems.

Methods

Study design and participants

This study was done within the Kilifi Health and Demographic Surveillance System (KHDSS), which is located in Kilifi County, about 60 km north of Mombasa city.¹² The KHDSS is both an area (divided into enumeration zones under regular surveillance) and a database (formed of the population under routine surveillance linked to admissions to Kilifi County Hospital). The KHDSS has a population of about 280 000 residents who are predominantly of the Mijikenda tribe and has an estimated 50 000 children aged 1–6 years. The KHDSS has a northern and southern region covering an area of 891 km². Epilepsy and neurodevelopmental clinics at Kilifi County Hospital provide therapeutic interventions and counselling services. Screening in stage 1 was done by trained fieldworkers who read out the content of the questionnaires to the parents owing to low literacy levels in this area, taking short breaks

every 10 min. The three questionnaires (for risk factors, behavioural and emotional problems, and seizures) in stage 1 were administered in a random order. A random sample of those with and without behavioural and emotional problems predetermined through a sample calculation was invited in stage 2 for a clinical evaluation study to determine medical comorbidities. This study was approved by the Scientific and Ethics Review Unit of the Kenya Medical Research Institute and written informed consent was obtained from parents or carers of children participating in the study.

Procedures

Behavioural and emotional problems were assessed in stage 1 with the Child Behaviour Checklist (CBCL), which was adapted and piloted in the local population and languages.¹³ The CBCL is used in children aged 1.5–5.5 years,² and has been applied on 1–6-year-old children; it identifies seven syndromes and five DSM-IV-oriented scales.¹⁴ The CBCL has acceptable psychometric properties on a sample of Kenyan preschool children in this area.¹³

The CBCL items had an internal consistency Cronbach's α of 0.95, and inter-informant agreement (Pearson's correlation coefficient, $r > 0.80$), test–retest reliability ($r = 0.76$), and the fit index of the seven-CBCL syndromes (eg, root mean square error of approximation < 0.05) were within acceptable ranges.¹³ Because of the literacy challenges in this area, CBCL questions were read out to the respondents (parents or guardians) by trained neuropsychological assessors fluent in the local languages. The language of administration was primarily

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