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Which factors are associated with help-seeking by parents regarding the socio-emotional development of their 3-year-old children: a longitudinal study.

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Abstract

Objectives Timely parental help-seeking regarding their child's socio-emotional development is associated with a lower rate and lower severity of psychosocial problems in later life. This study aimed to examine factors associated with parental help-seeking for the socio-emotional development of 3-year-old children.

Design Retrospective cohort study.

Setting Community-based survey in Rotterdam.

Participants Of 2305 parents and their 2-year-old children at baseline, 1507 who completed follow-up questionnaires were included in the analyses when children were three years old.

Outcome measures Parental help-seeking regarding their child's socio-emotional development and types of formal and informal help sources (e.g. General practitioner, internet) used in the past 12 months were measured. Hierarchical logistic regression models were applied to identify factors associated with parental help-seeking among thirteen predisposing, enabling, and need factors according to Andersen's Behavioral Model.

Results In total, 22.6% of parents reported help-seeking in the past 12 months for socio-emotional development of their 3-year-old child; 6.8% addressed formal help sources and 17.5% addressed informal help sources. General practitioner (2.7%) and family (12.5%) were the most frequently used formal and informal sources, respectively. In the full model, predisposing factors associated with a higher odds of parental help-seeking were child's other western ethnic background (OR=1.66, 95%CI: 1.02-2.68) and parental age =< 29 years old (OR=1.71, 95%CI: 1.01-2.92). No associated factors were found among enabling factors. The need factors associated with a higher odds of parental help-seeking were having previous help-seeking (OR=2.52, 95%CI: 1.83-3.48) and discussing child's socio-emotional development in the well-child visit (OR=2.47, 95%CI: 1.73-3.53).

Conclusions Predisposing and need factors were associated with parental help-seeking for socio-emotional development of 3-years-old child. The findings can be used to further develop support for parents accessing adequate information, prevention and anticipatory care with regard to the child's socio-emotional development.

Strengths and limitations of this study

- The study longitudinally investigated parental help-seeking for socio-emotional development of their 3-year-old child in a large community sample.
- Predisposing, enabling, and need factors following Andersen's Behavioral Model were studied.
- In total 14 formal and informal types of help-seeking behavior for the child's social-emotional development were considered.
- Help-seeking behavior for parent perceived problem behavior of the child was evaluated, instead of clinically diagnosed problem behavior.

Introduction

Psychosocial problems, such as attention deficit hyperactivity disorders (ADHD), conduct disorders, and anxiety disorders, are relatively common among young children.[1, 2] The literature suggests that 7%–25% of children worldwide experience psychosocial problems in early childhood (0-6 years).[3-8] Significantly, these psychosocial problems can track into adulthood.[9-11] Timely detection of (risk for) psychosocial problems and, consequently, offering appropriate interventions in early childhood can reduce problems and improve children's cognitive and academic performance.[1, 2, 5]

In order to identify psychosocial problems, validated instruments are often used such as the Revised Child Anxiety and Depression Scale (RCADS) for diagnosing anxiety and depression in 8-18 year old children.[12] At younger ages, certain behaviors (e.g. hitting, tantrums) can to some extent be part of the normal healthy development of psychosocial behavior of a child.[13] Therefore, for younger children instruments such as the Brief Infant–Toddler Social and Emotional Assessment (BITSEA) are used to detect 'at risk' behavior. Studies show that children's 'at-risk' behavior can change to not at-risk and vice versa over time.[14, 15] Since young children's ability to express their psychosocial well-being is developing, parents and professionals have an important role in monitoring the child's socio-emotional development[16-18] It is estimated that approximately one-third of parents seek help for the socio-emotional development of their children aged 4 to 11 who are at risk of psychosocial problems.[19-22] It is therefore important that parents take action for their concerns about their child's socio-emotional development to determine whether and what type of support is needed.

Help-seeking for such concerns might be guided by several factors, and, in this regard, Andersen and Newman provide a framework for health service use.[23] The framework postulates that the behavior of health service use depends on the three core groups of factors: (1) predisposing factors (demographic and social characteristics); (2) enabling factors (the ability to access services) and (3) need factors (the internal and external need for health care services). Previous studies have found that predisposing factors, such as child's ethnic background and gender, are associated with parental help-seeking.[24-28] Enabling factors, such as parents with higher educational levels and higher incomes, have been shown to positively encourage parents to seek help for their child's problem behavior (4-14 years old).[29, 30] An important need factor that has been reported to increase help-seeking by parents is recognition of the child's problem (6-11 years old).[20, 21, 31] Meanwhile, single-parent families, the high cost of professional mental health services and the self-stigma of parents have been indicated as barriers to help-seeking for children's socio-emotional development (3-11 years old).[21, 32-34] Thus far, research about parental help-seeking for the socio-emotional development has focused on school-aged children (4-12 years old) and adolescents (12-18 years old).[26, 27, 30, 35, 36]

The current study aimed to identify factors associated with parental help-seeking regarding the socio-emotional development of 3-year-old children. Following the Andersen & Newman framework, we studied the association between parental help-seeking and the three core factors: predisposing factors, enabling, and need factors. In addition, we explored the formal and informal help sources used in help-seeking.

Methods

Study design and population

For the present study, data were collected by parental questionnaires when the child was 2 years old and again with a follow up at 3 years old. In 2014 and 2015, parents living in the Rotterdam–Rijnmond area were invited by letter to participate in the study with their 2-year-old child. Parents were asked to complete and return the baseline questionnaire accompanied with a signed informed consent form when they visited the Dutch Preventive Youth Health Care (YHC) center for their regular well-child visit. In the Netherlands, regular well-child visits are one element of YHC which is offered free of charge to monitor and promote the health, well-being, and development of children aged 0-19 years.[36-38] One year later, parents enrolled in the study received the follow-up questionnaire by e-mail or by mail with the request to return the completed questionnaire to the researchers in a pre-paid envelope.

From November 2014 to August 2015, YHC invited all parents (estimated n=11245 parents) to participate in the study accompanying the regular well-child visit invitation at child age 2 years. In total, 8937 parents attended the YHC for their 2-year child well-child visit. Of these, 2316 parents gave their consent to participate in the study (participation rate=20.6%) and 2305 parents completed the first questionnaires (response rate=99.5%). At one-year follow-up, 1540 parents completed the second questionnaire. Children whose questionnaires were filled in by other caregivers instead of their parents (n=33) were excluded. Thus, 1507 participants were included in the analyses of this study (see Figure 1).

Parental help-seeking

When the children were 3 years old, parental help-seeking was assessed by asking parents whether they had sought help in the past 12 months with regard to issues with their child's behavior or socio-emotional development. Parents could indicate yes/no whether they sought help at one or more of the following formal and informal help sources: 1) general practitioner (GP), 2) youth protection services, 3) mental health care professionals (e.g., psychiatrist and child psychiatry outpatient clinic), 4) parenting support service (e.g., parenting courses and pedagogue service), 5) social worker, 6) family, 7) friend/acquaintance/neighbor, 8) internet, 9) complementary medicine (e.g., homoeopathy), 10) emergency telephone service, 11) prayer house (e.g., church, mosque or synagogue). There was an open answer possibility for parents to report other sources, and answers were recoded into the existing response categories or recoded into the new generated options: 12) book/magazines, 13) daycare center/school and 14) specialized medical care (e.g., clinical, rehabilitation). Parents could choose multiple options. When the parent chose one of the above options, one point was scored. A total score was generated by summing up all confirmatory responses (range 0-14). Total scores were dichotomized into 'no' (none confirmatory options) indicating parents did not seek help from any sources and 'yes' (one or more confirmatory options) indicating parent sought help from one or more help sources for children's socio-emotional development in the past 12 months.

Formal and informal help sources

The above response categories (1-14) were categorized into formal help sources and informal help sources. Formal help sources were GP (1), youth protection services (2), mental health care professionals (3), parenting support service (4), social worker (5), and specialized medical care (14). The remaining options were categorized as informal help: family (6), friend/acquaintance/neighbor (7), internet (8), complementary medicine (9), emergency telephone service (10), prayer house (11), book/magazine (12) and daycare center/school (13).

Scores within each category were added up and two variables were generated: 'formal help source used' and 'informal help source used'. For both variables, the responses were dichotomized into 'no' (total score=0) and 'yes' (total scores≥1).

Independent factors

Predisposing factors

Predisposing factors included child age, child gender, child ethnic background, and parental age measured at child-age 2 years. Child age (in months) at time of measurement was calculated from the date of birth. Child ethnic background (Dutch, other western, non-western) was defined based on country of birth of both parents according to the Classification of Statistics Netherlands.[20, 39, 40] When both parents were born in the Netherlands, the child was considered to have a Dutch background. When one parent was born outside the Netherlands, this country of birth determined child's ethnic background. When both parents were born outside the Netherlands, mother's country of birth determined the child's ethnic background.[20, 39] Parental age (in years) was reported by parents at baseline and classified into three categories based on the distribution: '>=40 years', '30-39 years' and '=<29 years'.

Enabling factors

Enabling factors assessed at 24 months included parental educational level, parental work status, and family composition. Parental educational level was measured by one item asking about the highest level of education finalized by the respondent (mother or father) at 24 months. Educational level was categorized as high (higher vocational education, university), middle (higher secondary education, vocational education) or low (primary education, lower secondary education).[20, 40] Parental work status was classified as 'employed (including full-time job and part-time job)' and 'unemployed'. Family composition was categorized into two-parent family or one-parent family.

Need factors

Need factors assessed at 24 months included the BITSEA Problem and Competence scale, stressful life events, child's general health, parental satisfaction of child's development, previous help-seeking and discussing child's socio-emotional development in the well-child visit.

The BITSEA consists of a 31-item Problem scale and an 11-item Competence scale which measures psychosocial well-being in children 12-36 months. Each item is scored 0 for 'not true', 1 for 'somewhat true', and 2 for 'certainly true'.[41] The items from the two scales of BITSEA are summed up independently. A score of 14 or higher on the Problem scale was categorized as 'at

risk of psychosocial problems', and a score of 15 or lower on the competence scale was termed as 'at risk of competence delay'.[42, 43]

Stressful life events were measured by assessing the occurrence of twelve stressful life events, such as a family relocation, divorce, or financial problem. If an event had happened, parents indicated when the specific life event happened: last year, 1-2 years ago, 3-4 years ago, or more than 4 years ago. When parents confirmed the occurrence of one event within the past two years (the first two options), one point was scored. If one event happened two years ago, then the event was not counted as a stressful life event for the child. A total score was calculated by summing up the points assigned. The stressful life events variable was generated with two categories based on the total score: total score 0 indicating 'no' and ≥1 'yes'.

The child's general health (good vs poor) and parental satisfaction of the child's development (yes vs no) were measured by two subscales of the Infant Toddler Quality of Life Questionnaire of 47 items (ITQOL-SF47).[44] According to the user manual, the raw scores of each variable were transformed and dichotomized. The scores above the cut-off point indicated a child's good general health and parent-satisfied development, respectively.[45]

Previous help-seeking was assessed at 24 months with the question: 'Have you sought help for your child due to his/her socio-emotional development from the following sources in the past two years?'. The answer options (1-14) were the same as the help-seeking question at 36 months. These options were re-categorized in the same way: 'no' (none confirmatory options) and 'yes' (one or more confirmatory options).

The discussion of the child's socio-emotional development in the well-child visit was measured by one question: 'During the regular well-child visit with YHC when the child was two years old, were any specifics regarding your child's behavior, social, and emotional development discussed?' The options were 'no' and 'yes'.

Patient and public involvement statement

Neither patients nor the public was involved in the planning, design, conduct or reporting of this study.

Statistical analysis

Data analysis

Descriptive statistics were used to describe the characteristics of the study population. Hieratical logistic regression models were fitted to investigate the associated factors of help-seeking. All

categorized variables were included as the independent variables by block. The first model (model 1) regarded predisposing variables as independent variables. The second model (model 2) additionally included enabling variables as independent variables. Finally, a third full model (model 3) with all variables from the three blocks was fitted. Descriptive statistics were used to describe formal and informal help-seeking of parents.

Furthermore, we assessed interactions between the 13 factors (potentially associated with help-seeking behaviour) and child gender, child ethnic background, parental age, and parental education level with regard to the association with help-seeking. After applying Bonferroni correction for multiple testing (p=0.05/42=0.001), no statistically significant interactions were found. All *P*-values of the interaction analyses are presented in Supplementary Table S1. A non-response analysis was conducted to assess differences between participants participating in follow-up and those lost to follow-up in Supplementary Table S2.

A p-value <0.05 was considered to be statistically significant. All analyses were completed using the IBM SPSS version 25 (IBM Corp., Armonk, NY, USA).

Missing data

Regarding the missing data among the sample of 1507 children, multiple imputation by Fully Conditional Specification (FCS) was used to deal with the missing values on all independent variables in SPSS.[46-48] The pooled results of five imputed datasets were used. Finally, we conducted logistic regression analysis on complete-case data as a sensitivity analysis to check the robustness of results.

Results

Characteristics of the study population

Of all parents, 22.6% (n=341) reported help-seeking in the past 12 months for their 3-year-old child's psychosocial health; 6.8% (n=103) addressed formal help sources and 17.5% (n=264) addressed informal help sources. As for children, the mean age was 24.5 (SD=1.8) months (Table 1). Half of the children were boys (49.4%), 80.2% were Dutch, and 93.8% of the children lived in a two-parent family. Most parents were 30-39 years old (70.1%), employed (81.2%), and 59.6% had a high educational level.

Regarding comparison between parents with help-seeking experience and their counterparts, two predisposing factors child age (p>0.05) and child gender (p>0.05) were not significantly different.

Compared to participants lost in the follow-up (n=775), participants in the follow-up (n=1540) were, as a child, more likely to be at a younger age and have a Dutch ethnic background and, as a parent, to be at an older age and have a higher educational level (all p<0.001). No significant differences were found between boys and girls (p>0.05) (Supplementary Table S2).

Table 1. Characteristics of the study population (n=1507)

Items	Total (n=1507) Mean ± SD N(%)	Help-seeking No (n=1166) Mean ± SD N(%)	Help-seeking Yes (n=341) Mean ± SD N(%)	*p* value
Predisposing Factors				
Child age in months	24.5±1.8	24.5±1.8	24.5±1.9	0.802
Child gender				0.566
Boys	739 (49.4)	568 (49.0)	171 (50.7)	
Girls	758 (50.6)	592 (51.0)	166 (49.3)	
Child ethnic background				0.026*
Dutch	1161 (80.2)	917 (81.7)	244 (75.1)	
Other western	107 (7.4)	75 (6.7)	32 (9.8)	
Non-western	179 (12.4)	130 (11.6)	49 (15.1)	
Parental age in years				0.003**
>=40	166 (11.1)	140 (12.1)	26 (7.7)	
30-39	1048 (70.1)	818 (70.6)	230 (68.0)	
=<29	282 (18.9)	200 (17.3)	82 (24.3)	
Enabling Factors				
Parental educational level				0.003**
High	883 (59.9)	710(62.3)	173 (52.0)	
Middle	498 (33.8)	362 (31.8)	136 (40.8)	
Low	92 (6.2)	68 (6.0)	24 (7.2)	

Parental work status				< 0.001***
Employed	1195(81.8)	947 (83.9)	248 (74.7)	
Unemployed	266 (18.2)	182 (16.1)	84 (25.3)	
Family composition				0.004**
Two-parent family	1386 (93.8)	1084 (94.8)	302 (90.4)	
Single-parent family	92 (6.2)	60 (5.2)	32 (9.6)	
Need Factors				
BITSEA Problem scale score				< 0.001***
No risk	1400 (94.0)	1101 (95.6)	299 (88.5)	
At risk	90 (6.0)	51 (4.4)	39 (11.5)	
BITSEA Competence scale score				0.011*
No risk	1300 (88.0)	1017 (89.1)	283 (84.0)	
At risk	178 (12.0)	124 (10.9)	54(16.0)	
Stressful life events				< 0.001***
No	749 (51.0)	608 (53.5)	141 (42.3)	
Yes	720 (49.0)	528 (46.5)	192 (57.7)	
General health of the child [a]				0.007**
Good	1370 (92.2)	1070(93.2)	300 (88.8)	
Poor	116 (7.8)	78 (6.8)	38 (11.2)	
Parental satisfaction of child's development [b]				<0.001***
Yes	1380 (94.7)	1074(95.9)	306 (90.5)	
No	78 (5.3)	46(4.1)	32 (9.5)	
Previous help-seeking				<0.001***
No	1208 (82.2)	992 (87.1)	216 (65.5)	
Yes	261 (17.8)	147 (12.9)	114 (34.5)	
Discussion of child's socio-emotional development in the well-child visit				<0.001***
No	1196 (85.6)	980 (89.8)	216 (70.6)	
Yes	201 (14.4)	111 (10.2)	90 (29.4)	

Note: This table presents non-imputed data. The missing numbers of variables are child gender (n=10), child ethnic background (n=60), parental age (n=11), parental educational level (n=34), parental work status (n=46), family composition (n=29), BITSEA Problem scale score (n=17), BITSEA Competence scale score (n=29), stressful life events (n=38), general health of the child (n=21), parental satisfaction of child's development (n=49), previous help-seeking (n=38), and discussion of child socio-emotional development in the well-child visit (n=110).

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: SD=standard deviation; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

* p <0.05; ** p <0.01; *** p <0.001.

Factors associated with parental help-seeking

Table 2 presents the results of logistic regression analyses. Model 1 with predisposing factors as independent factors showed that having an other-western ethnic background (OR=1.73, 95%CI: 1.10-2.71) and non-western ethnic background as a child (OR=1.51, 95%CI: 1.05-2.18) as well as parental age =< 29 years old (OR=2.28, 95%CI: 1.38-3.77) were associated with parental help-seeking.

Model 2 shows the association between predisposing factors and enabling factors. Of predisposing factors, having an other-western ethnic background (OR=1.66, 95%CI: 1.05-2.60) and parental age =<29 years old (OR=1.96, 95%CI: 1.17-3.27) were associated with parental help-seeking. Two enabling factors parental educational level (OR=1.36, 95%CI: 1.04-1.79) and parental employed status (OR=1.47, 95%CI: 1.07-2.02) were associated with parental help-seeking.

In the full model (model 3), two predisposing factors having an other-western ethnic background as a child (OR=1.66, 95%CI: 1.02-2.68) and parental age=<29 years old (OR=1.71, 95%CI: 1.01-2.92) were associated with a higher odds for parental help-seeking. No associations were found between enabling factors and parental help-seeking. Of the need factors, previous help-seeking (OR=2.52, 95%CI: 1.83-3.48) and discussion of child socio-emotional development in the well-child visit (OR=2.47, 95%CI: 1.73-3.53) were associated with a higher odds for parental help-seeking for socio-emotional development at child age 3 years.

Table 2. Associations between predisposing, enabling, and need factors and parental help-seeking in the past 12 months for the 3-year-old child (n=1507)

	Multivariate					
	Model 1		Model 2		Model 3	
	Predisposing variables		Plus enabling variables		Plus need variables	
	OR	95% CI	OR	95% CI	OR	95% CI
Predisposing Factors						
Child gender						
Boys	Ref		Ref		Ref	
Girls	0.93	0.73-1.19	0.93	0.73-1.19	0.98	0.75-1.27
Child ethnic background						
Dutch	Ref		Ref		Ref	
Other western	1.73*	1.10-2.71	1.66*	1.05-2.60	1.66*	1.02-2.68
Non-western	1.51*	1.05-2.18	1.20	0.81-1.78	1.18	0.77-1.79
Parental age in year						
>=40	Ref		Ref		Ref	
30-39	1.56	0.99-2.46	1.57	1.00-2.46	1.45	0.90-2.32

=<29	2.28**	1.38-3.77	1.96*	1.17-3.27	1.71*	1.01-2.92
Enabling Factors						
Parental educational level						
High			Ref		Ref	
Middle			1.36*	1.04-1.79	1.30	0.97-1.74
Low			1.12	0.67-1.89	1.10	0.63-1.90
Parental work status						
Employed			Ref		Ref	
Unemployed			1.47*	1.07-2.02	1.28	0.91-1.80
Family composition						
Two-parent family			Ref		Ref	
Single-parent family			1.51	0.95-2.41	1.31	0.80-2.15
Need Factors						
BITSEA Problem scale score						
No risk					Ref	
At risk					1.20	0.72-1.99
BITSEA Competence scale score						
No risk					Ref	
At risk					1.18	0.78-1.79
Stressful life events						
No					Ref	
Yes					1.29	0.98-1.68
General health of the child [a]						
Good					Ref	
Poor					1.16	0.73-1.85
Parental satisfaction of child's development [a]						
Yes					Ref	
No					1.35	0.75-2.45
Previous help-seeking						
No					Ref	
Yes					2.52***	1.83-3.48
Discussion of child socio-emotional development in the well-child visit						
No					Ref	
Yes					2.47***	1.73-3.53

Model 1: The model with predisposing factors as independent variables.

Model 2: The model with predisposing and enabling factors as independent variables.

Model 3: The full model with predisposing, enabling, and need factors as independent variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: OR=Odds Ratio; CI=Confidence Interval; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

* p <0.05; ** p <0.01; *** p <0.001

Use of formal and informal help sources

Table 3 shows the frequency of formal and informal help sources used in parental help-seeking for their 3-year-old child's socio-emotional development in the past 12 months. Among the 341 parents who reported help-seeking, fewer parents (30.2%) reported the use of formal help sources than parents (77.4%) who reported the use of informal help sources (p<0.001, Supplementary Table S3). Only 26 (7.6%) parents used both formal and informal help sources. The GP (12.0%) and parenting support services, such as parenting courses (9.4%), were the most frequently used formal help source. Family (55.4%) and friends/acquaintance/neighbor (40.5%) were the most frequently used informal help sources. Characteristics of the study population by use of formal and informal sources in parental help-seeking are presented in Supplementary Table S4.

Table 3. Use of formal and informal help sources in parental help-seeking in the past 12 months for the 3-year-old child (n=1507)

	n	Total sample (%)	Help-seeking (Yes) (%)
		(n=1507)	(n=341)
Parents reported use of help sources (yes)	341	22.6	100.0
Formal and informal help sources	26	1.7	7.6
Formal help source(s) only	77	5.1	22.6
Informal help source(s) only	238	15.8	69.8
Type of help sources			
Formal Sources (yes)	103	6.8	30.2
General practitioner	41	2.7	12.0
Parenting support service	32	2.1	9.4
Specialized medical care	20	1.3	5.9
Youth protection services	18	1.2	5.3
Mental health care professionals	11	0.7	3.2
Social worker	1	0.1	0.3
Informal Sources (yes)	264	17.5	77.4
Family	189	12.5	55.4
Friend/acquaintance/neighbor	138	9.2	40.5
Internet	71	4.7	20.8
Daycare center/school	12	0.8	3.5
Complementary medicine	4	0.3	1.2
Emergency telephone service	3	0.2	0.9
Book/magazine	2	0.1	0.6
Prayer house	1	0.1	0.3

Note. Parents could endorse more than one option; hence, the sum of each subcategory does not total up to 100%.

Additional data analyses

Supplementary Table S5 shows the results of multivariate logistic regression conducted with complete data. There was a difference between the full models of multivariate logistic regression conducted with non-imputed data and those with imputed data. In the imputed data analysis, parents of a child with other-western ethnic background (OR=1.66, 95%CI: 1.02-2.68) in the predisposing block were more likely to have help-seeking. This association was not significant (OR=1.51, 95%CI: 0.87-2.63) in the analysis conducted with complete data. On the other hand, stressful life events (OR=1.45, 95%CI: 1.07-1.96) in the need block were associated with help-seeking in the complete data analysis but not in the imputed data analysis (OR=1.29, 95%CI: 0.98-1.68). Although the significance in two factors changed, the pattern of relevant factors was similar. The rest of the factors in three blocks kept the same association and significance in the imputed data analysis and the complete data analysis, thereby indicating the robustness of the model. Furthermore, we conducted the Chi-square test of homogeneity, which showed that there were no significant differences (all p-values >0.05) between the characteristics of the imputed data and the complete data (Supplementary Table S6).

Discussion

In the present study, factors associated with parental help-seeking for the socio-emotional development of 3-year-old children were studied. Among predisposing factors, having an other-western ethnic background as a child and parental age younger than 29 years old indicated a higher odds of parental help-seeking for the socio-emotional development of children aged 3 years. Also, previous help-seeking and discussing the child's socio-emotional development in the well-child visit as need factors were associated with a higher odds for parental help-seeking. No association was found between enabling factors and parental help-seeking.

The findings of predisposing factors indicated parents of child with other-western background were more like to seek help, compared with parents of Dutch children. Existing studies on the association between minority ethnic background and help-seeking for children's socio-emotional development have showed conflicting results.[26, 36, 49, 50] These differing results may be due to the different characteristics of minor ethnic backgrounds as well as differing help-seeking measures among the studies.[19, 36] Although parents of children from minority ethnic background perceived more barriers to access formal help-seeking, studies report these parents are able to access informal help sources as easily and as equally to native parents [32, 51-53] Moreover, the health care framework in the Netherlands (e.g. equal primary care, collaboration of professionals in the community, universal health care), and social contexture (e.g. language and cultural similarity) may partly reduce barriers to health care among the parents with other western background. [19, 54-58]

Besides the child's other-western background, as a predisposing factor, parental age was also associated with help-seeking: younger parents were more likely to seek help for their 3-year-old child. Previous studies have reported first-time parents to be more open and actively involved in searching for information about parenting and child development.[59] First-time parents are also more likely to reach out for help.[60] In the current study, we were unable to adapt for the parity of the child; therefore, we were not able to evaluate whether this explanation might hold for our findings.

With regard to enabling factors without correction for the need factors, parental educational level and employment status were associated with help-seeking. After correction for the need factors, parental educational level, employment status and family composition were not significantly associated. Studies on association between three enabling factors and help-seeking have reported contrary results. In the Netherlands, equal access to primary care (e g. GPs and YHC), to comprehensive care professionals in clinics and communities, and to universal health care may reduce the barriers for parents in the enabling domain.[55, 56] Similar results have been found in other studies conducted in a similar context.[53, 61, 62]

With regard to need factors, we observed that parents seeking any help for their child's socio-emotional development before the age of 2 years were more likely to seek help in the past 12 months at child age 3 years. It is plausible that parents who had previous help-seeking may be able to deal better with barriers (e.g. parents' self-stigma) and with exploring more sources in terms of help-seeking.[36] In addition, the literature regarding the use of mental health service for children and adolescents suggests that social and emotional problems exist over a longer period of time.[27, 63] Therefore, it is suggested that for actual problem behavior longitudinal care is needed.[11, 22, 64] Consequently, findings underline the importance of YHC in monitoring advice for children's socio-emotional development.

Furthermore, parents who had previously discussed their child's socio-emotional development in the well-child visit at the child age of 2 years, were more likely to seek help in the past 12 months. In the Netherlands, the discussion during the well-child visit could be raised by parents or YHC professionals. The YHC professionals can suggest a discussion based on the evaluation of the child's socio-emotional development. Parents also can consult on this issue if they are concerned about their child's socio-emotional development. In this capacity, the YHC professional assists the parent to recognize early childhood psychosocial problems. Although recognition of problem behavior by parents has been reported to be difficult for parents, it is important for them to be able to seek help in time.[5, 17, 20, 25, 26] The YHC thus plays a crucial role in screening and identifying children's social and emotional problems in the Netherlands.[65]

Consistent with previous studies in school-aged children, our results showed that formal help sources were used less frequently than informal help sources for children's socio-emotional development.[21, 31] Gaining access to formal help sources may have more barriers, such as iterative referral processes, long waiting times and high costs.[32, 51, 66] The informal help sources most often used in this study were the parental social network as well as information from books and the internet.[52, 67] Accordingly, compared with formal help sources, informal help sources might be more directly available and accessible for parents when they are seeking help for their children's socio-emotional development.[24, 66]

The present study has several strengths. First, the longitudinal association between predisposing, enabling, and need factors and parental help-seeking was studied among a large population-based sample of parents of 3-year-old children. Parental help-seeking for children under 4 years old is rarely studied.[19, 21, 31] Second, formal and informal help sources in parental help-seeking were included. Specifically, a broad range of informal help sources, e.g., internet, books, complementary medicine and religious institutes were assessed. Nevertheless, there were some limitations that need to be addressed. First, the social and emotional problems were those that parents perceived and were generally evaluated, whereas specific conditions with diagnoses, such as anxiety and depression diagnosed by RCADS, could

have provided more precise information. Our study focusses on at-risk behavior and provides insight into more timely detection of problem behavior. Second, parental help-seeking is self-reported and recall bias is possible; however, the a one-year recall might have decreased recall inaccuracy.[68] Third, the multivariate regression analyses showed a slight difference between results conducted with the complete data and those with the imputed data. Therefore, we assessed the homogeneity of the above two datasets (Supplementary Table S6), and found no significant difference in the characteristics of the two populations ($p>0.05$). Fourth, these results must be considered within the context of their limitations. The population based sample was drawn from a city where university and public service employees are overrepresented. Consequently, generalization of the findings to national samples may be limited. Finally, a lack of repeated measurements did not allow us to establish the causal association in the current study.

Conclusion

The associations between predisposing, enabling, and needs factors and help-seeking by parents of preschool children with regard to their child's socio-emotional development were evaluated. The factors 'non-western ethnic background', younger age of the parent, previous help-seeking and specific discussions about the child's socio-emotional development during the well-child visit were associated with the presence of parental help-seeking. Parents reported using informal help sources more often than formal help sources. The findings can be used to further develop support for parents to access adequate information, prevention, and anticipatory care with regard to their child's socio-emotional development.

Footnotes

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Competing interests: Non-financial associations that may be relevant to the submitted manuscript.

Ethics approval: The Medical Ethical Committee of the Erasmus Medical Center Rotterdam declared that the Medical Research Involving Human Subject Act (Dutch abbreviation WMO) did not apply to the present study and, subsequently, permission was given to carry out the study and to publish the results in scientific journals (number MEC-2014-152). This study was conducted by following the guidelines proposed in the World Medical Association Declaration of Helsinki.

Contributors: HR obtained the funding. HR, AG, and RB managed the research and undertook data collection. CBF, JL, AG, and HR conceived the research described in this paper. JL analyzed the data. All authors provided input in interpreting the data. JL drafted the manuscript with input of AG , CBF, HR and GB. All authors critically reviewed and approved the manuscript.

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Figure

Title: Which factors are associated with help-seeking by parents regarding the socio-emotional development of their 3-year-old children: a longitudinal study.

Journal: BMJ Open

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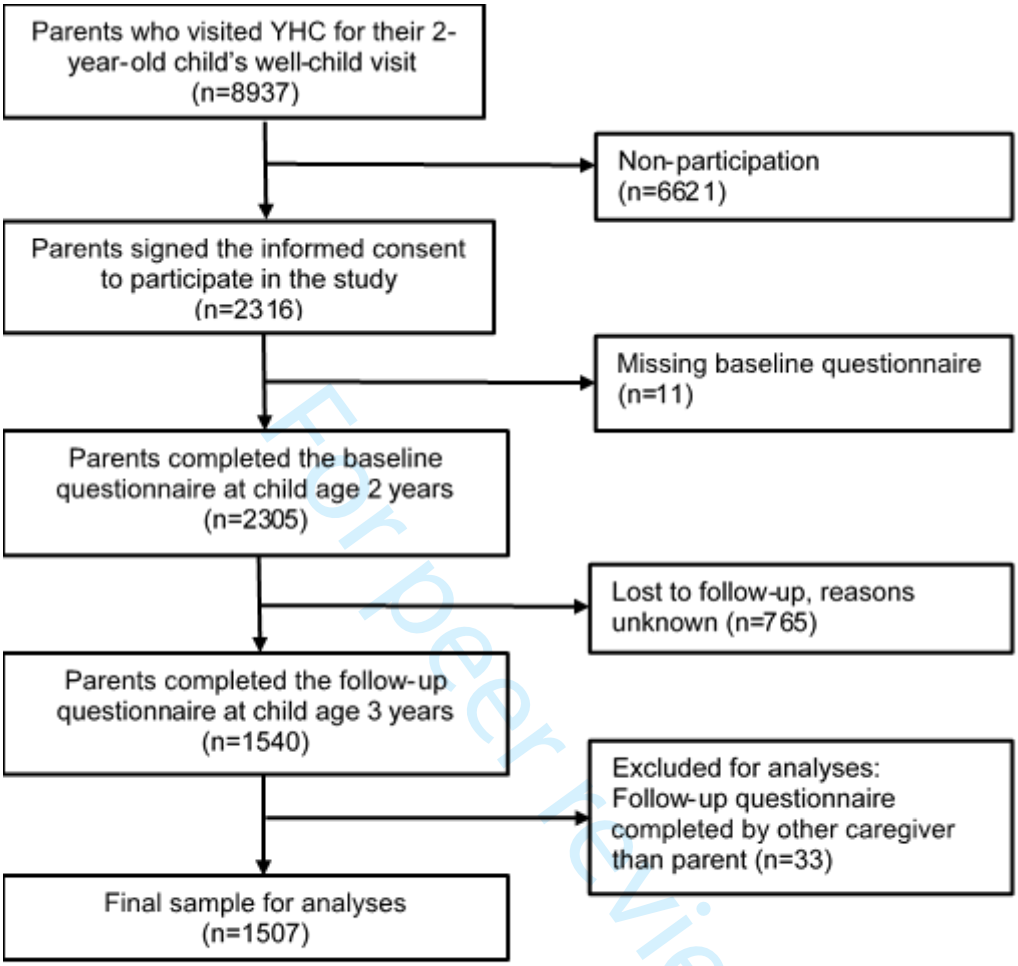

Figure 1. Population of Analysis

Supplementary Materials

Title: Which factors are associated with help-seeking by parents regarding the socio-emotional development of their 3-year-old children: a longitudinal study.

Journal: BMJ Open

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Supplementary Table S1. *P*-values for interactions between the 13 factors and child gender, child ethnic background, parental age and parental education level on help-seeking (n=1507)

	Child gender	Child ethnic background	Parental age	Parental education level
	p value	*p* value	*p* value	*p* value
Child gender	-	0.877	0.537	0.751
Child ethnic background	0.877	-	0.049	0.981
Parental age	0.537	0.049	-	0.829
Parental education level	0.751	0.981	0.829	-
Parental work status	0.325	0.909	0.841	0.069
Family composition	0.226	0.078	0.887	0.194
BITSEA Problem scale score	0.419	0.373	0.074	0.969
BITSEA Competence scale score	0.414	0.853	0.406	0.100
Stressful life events	0.003	0.518	0.786	0.033
General health of the child	0.893	0.171	0.442	0.271
Parental satisfaction of child's development	0.446	0.307	0.350	0.347
Previous help-seeking behavior	0.274	0.619	0.159	0.567
Discussion of child social-emotional development in the well-child visit	0.552	0.193	0.126	0.731

Note: numbers in table are p-values of interaction of the variables in rows and columns.

Abbreviations: BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

Multivariate logistic regression was adopted for interaction analyses in the full model with predisposing variables, enabling variables and need variables as independent variables. After applying Boneferroni correction for multiple testing (P=0.05/42=0.001), no statistically significant interaction was found.

Supplementary Table S2. Non-response analyses (n = 2305)

	Total (n=2305) Mean ± SD N(%)	Response to follow-up		*p* value
		No (n=765) Mean ± SD N(%)	Yes (n=1540) Mean ± SD N(%)	
Child age in months	24.6±1.8	24.8±1.6	24.5±1.8	<0.001
Child gender				0.155
Boy	1159 (50.6)	401 (52.7)	758 (49.5)	
Girl	1132 (49.4)	360 (47.3)	772 (50.5)	
Child ethnic background				<0.001
Dutch	1576 (73.3)	415 (58.9)	1161 (80.2)	
Other western	166 (7.7)	59 (8.4)	107 (7.4)	
Non-western	409 (19.0)	230 (32.7)	179 (12.4)	
Parental age in year				<0.001
>=40	262 (22.6)	89 (11.8)	173 (11.3)	
30-39	1500 (65.9)	438 (58.2)	1062 (69.6)	
=<29	515 (11.5)	225 (29.9)	290 (19.0)	
Parental education level				<0.001
High	1175 (52.8)	282 (39.1)	893 (59.5)	
Middle	858 (38.6)	345 (47.8)	513 (34.2)	
Low	191 (8.6)	95 (13.2)	96 (6.4)	

Note: This table present non-imputed data. The missing numbers of variables are child age (n=32), child gender (n=16), child ethnic background (n=165), parental age (n=39), parental educational level (n=92).

Abbreviation: SD=standard deviation.

P values are based on Independent t-test and chi-square test for non-response to follow-up and response groups.

Supplementary Table S3. McNemar's test for homogeneity of formal sources use and informal sources use (n=1507)

	Informal sources use			*p* value
	Yes	No	Total	
Formal sources use				
Yes	26	77	1404	<0.001
No	238	1166	103	
Total	264	1243	1507	

P value is based on the McNemar's test.

Supplementary Table S4. Characteristics of the study population by use of formal and informal sources in parental help-seeking (n=1507)

	Total	Use of formal sources			Use of Informal sources		
		No	Yes		No	Yes	
	(n=1507) Mean ± SD N(%)	(n=1404) Mean ± SD N(%)	(n=103) Mean ± SD N(%)	*p* value	(n=1243) Mean ± SD N(%)	(n=264) Mean ± SD N(%)	*p* value
Predisposing Factors							
Child age in month	24.5±1.8	24.5±1.9	24.5±1.6	0.920	24.5±1.8	24.5±2.0	0.593
Child gender				0.029			0.648
Boys	739 (49.4)	678 (48.6)	61 (59.8)		614 (49.6)	125 (48.1)	
Girls	758 (50.6)	717 (51.4)	41 (40.2)		623 (50.4)	135 (51.9)	
Child ethnic background				0.020			0.508
Dutch	1161 (80.2)	1093 (81.0)	68 (69.4)		966 (80.8)	195 (77.7)	
Other western	107 (7.4)	96 (7.1)	11 (11.2)		85 (7.1)	22 (8.8)	
Non-western	179 (12.4)	160 (11.9)	19 (19.4)		145 (12.1)	34 (13.5)	
Parental age in year				0.285			0.001
>=40	166 (11.1)	155 (11.1)	11 (10.9)		149 (12.1)	17 (6.5)	
30-39	1048 (70.1)	983 (70.5)	65 (64.4)		870 (70.6)	178 (67.7)	
=<29	282 (18.9)	257 (18.4)	25 (24.8)		214 (17.4)	68 (25.9)	
Enabling Factors							
Parental education level				0.001			0.170
High	883 (59.9)	841 (61.1)	42 (43.3)		740 (61.1)	143 (54.8)	
Middle	498 (33.8)	449 (32.6)	49 (50.5)		399 (32.9)	99 (37.9)	
Low	92 (6.2)	86 (6.3)	6 (6.2)		73 (6.0)	19 (7.3)	
Parental work status				0.006			0.015
Employed	1213(81.2)	1125 (82.5)	70 (71.4)		996 (82.9)	199 (76.5)	
Unemployed	280 (18.8)	238 (17.5)	28 (28.6)		205 (17.1)	61 (23.5)	
Family composition				0.210			0.054
Two-parent family	1386 (93.8)	1297 (94.0)	89 (90.8)		1149 (94.3)	237 (91.2)	
Single-parent family	92 (6.2)	83 (6.0)	9 (9.2)		69 (5.7)	23 (8.8)	
Need Factors							
BITSEA Problem scale score				<0.001			0.021
No risk	1400 (94.0)	1319 (95.0)	81 (80.2)		1161 (94.6)	239 (90.9)	
At risk	92 (6.0)	70 (5.0)	20 (19.8)		66 (5.4)	24 (9.1)	
BITSEA Competence scale score				0.001			0.352
No risk	1300 (88.0)	1222 (88.7)	78 (77.2)		1074 (88.3)	226 (86.3)	

At risk	178 (12.0)	155(11.3)	23(22.8)		142 (11.7)	36 (13.7)	
Stressful life events				0.048			0.001
No	749 (51.0)	708 (51.7)	41 (41.4)		641 (53.0)	108 (41.7)	
Yes	720 (49.0)	662 (48.3)	58 (58.6)		569 (47.0)	151 (58.3)	
General health of the child [a]				0.007			0.153
Good	1370 (92.2)	1283(92.7)	87 (85.3)		1135 (92.7)	235 (90.0)	
Poor	116 (7.8)	101 (7.3)	15 (14.7)		90 (7.3)	26 (10.0)	
Parental satisfaction of child's development [b]				<0.001			0.366
Yes	1380 (94.7)	1297(95.6)	83 (81.4)		1135 (94.9)	245 (93.5)	
No	78 (5.3)	59(4.4)	19 (18.6)		61 (5.1)	17 (6.5)	
Previous help-seeking				<0.001			<0.001
No	1208 (82.2)	1151 (83.9)	57 (58.8)		1039 (85.8)	169 (65.5)	
Yes	261 (17.8)	221 (16.1)	40 (41.2)		172 (14.2)	89 (34.5)	
Discussion of child socio-emotional development in the well-child visit				<0.001			<0.001
No	1196 (85.6)	1148 (88.0)	48 (52.2)		1017 (87.6)	179 (75.8)	
Yes	201 (14.4)	157 (12.0)	44 (47.8)		144 (12.4)	57 (24.2)	

Note: This table presents non-imputed data. The missing numbers of variables are parental age (n=11), child gender (n=10), child ethnic background (n=60), parental educational level (n=34), parental work status (n=46), family composition (n=29), BITSEA Problem scale score (n=17), BITSEA Competence scale score (n=29), stressful life events (n=38), general health of the child (n=21), parental satisfaction of child's development (n=49), previous help-seeking (n=38), and discussion of child socio-emotional development in the well-child visit (n=110).

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: SD=standard deviation; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

The bold print indicates p <0.05.

Supplementary Table S5. Multivariate logistic regression model on independent factors and help-seeking with complete data (n=1168)

	Model 1		Model 2		Model 3	
	Predisposing variables		Plus enabling variables		Plus need variables	
	OR	95% CI	OR	95% CI	OR	95% CI
Predisposing Factors						
Child gender						
Boy	Ref		Ref		Ref	
Girl	0.86	0.65-1.14	0.86	0.65-1.14	0.93	0.69-1.25
Child ethnic background						
Dutch	Ref		Ref		Ref	
Other western	1.51	0.90-2.54	1.45	0.86-2.44	1.51	0.87-2.63
Non-western	1.52	1.00-2.33	1.21	0.77-1.90	1.18	0.72-1.91
Parental age in year						
>=40	Ref		Ref		Ref	
30-39	1.67	0.97-2.88	1.72	0.99-2.96	1.51	0.86-2.65
=<29	2.87***	1.59-5.18	2.53**	1.39-4.59	2.23*	1.20-4.15
Enabling Factors						
Parental education level						
High			Ref		Ref	
Middle			1.27	0.93-1.73	1.24	0.89-1.71
Low			1.00	0.52-1.94	0.93	0.46-1.87
Parental work status						
Employed			Ref		Ref	
Unemployed			1.59*	1.11-2.27	1.32	0.90-1.95
Family composition						
Two-parent family			Ref		Ref	
Single-parent family			1.66	0.91-3.03	1.46	0.77-2.75
Need Factors						
BITSEA Problem scale score						
No risk					Ref	
At risk					0.96	0.51-1.81
BITSEA Competence scale score						
No risk					Ref	
At risk					1.35	0.85-2.14
Stressful life events						
No					Ref	
Yes					1.45*	1.07-1.96

General health of the child [a]		
Good	Ref	
Poor	1.25	0.73-2.14
Parental satisfaction of child's development [b]		
Yes	Ref	
No	1.58	0.81-3.09
Previous help-seeking		
No	Ref	
Yes	2.71***	1.90-3.88
Discussion of child social and emotional development in the well-child visit		
No	Ref	
Yes	2.67***	1.82-3.92

Model 1: The model with predisposing factors as independent variables.
Model 2: The model with predisposing and enabling factors as independent variables.
Model 3: The full model with predisposing, enabling, and need factors as independent variables.
a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).
b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).
Abbreviation: OR=Odds Ratio; CI=Confidence Interval; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.
* p <0.05; ** p <0.01; *** p <0.001.

Supplementary Table S6. Chi-square test for homogeneity of complete data and imputed data

	Complete data (n=1168) N(%)	Imputed data (n=1507) N(%)	*p* value
Predisposing Factors			
Child gender			
Boy	569 (48.7)	744 (49.4)	0.737
Girl	599 (51.3)	763 (50.6)	
Child ethnic background			
Dutch	959 (82.1)	1202(79.8)	0.260
Other western	83 (7.1)	113 (7.5)	
Non-western	126 (10.8)	192 (12.7)	
Parental age in year			
>=40	123 (10.5)	167 (11.1)	0.899
30-39	825 (70.6)	1056 (70.1)	
=<29	220 (18.8)	284 (18.8)	
Enabling Factors			
Parental education level			
High	717 (61.4)	901 (59.8)	0.394
Middle	391 (33.5)	511 (33.9)	
Low	60 (5.1)	95 (6.3)	
Parental work status			
Employed	958 (82.0)	1227 (81.4)	0.690
Unemployed	210 (18.0)	280 (18.6)	
Family composition			
Two-parent family	1111 (95.1)	1407 (93.4)	0.055
Single-parent family	57 (4.9)	100 (6.6)	
Need Factors			
BITSEA Problem scale score			
No risk	1103 (94.4)	1411 (93.6)	0.385
At risk	65 (5.6)	96 (6.4)	
BITSEA Competence scale score			
No risk	1045 (89.5)	1318 (87.5)	0.108
At risk	123 (10.5)	189 (12.5)	
Stressful life events			
No	606 (51.9)	769 (51.0)	0.661
Yes	562(48.1)	738 (49.0)	
General health of the child [a]			
Good	1081 (92.6)	1390 (92.2)	0.761

Poor	87 (7.4)	117 (7.8)	
Parental satisfaction of child's development [b]			
Yes	1112 (95.2)	1428 (94.6)	0.453
No	56 (4.8)	82 (5.4)	
Previous help-seeking			
No	971 (83.1)	1236 (82.0)	0.451
Yes	197 (16.9)	271 (18.0)	
Discussion of child social and emotional development in the well-child visit			
No	1010 (86.5)	1287 (85.4)	0.430
Yes	158 (13.5)	220 (14.6)	

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

P values are based on the independent chi-square test for complete data and imputed data groups.

STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3,4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4,5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	5
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	-
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5,6,7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	-
Bias	9	Describe any efforts to address potential sources of bias	-
Study size	10	Explain how the study size was arrived at	-
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	-
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	8
		(*d*) If applicable, explain how loss to follow-up was addressed	-
		(*e*) Describe any sensitivity analyses	8
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	Figur2
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9
		(b) Indicate number of participants with missing data for each variable of interest	10
		(c) Summarise follow-up time (eg, average and total amount)	-
Outcome data	15*	Report numbers of outcome events or summary measures over time	9

Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (*b*) Report category boundaries when continuous variables were categorized (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	12,13 - -
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	15
Discussion			
Key results	18	Summarise key results with reference to study objectives	16
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	17,18
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18
Generalisability	21	Discuss the generalisability (external validity) of the study results	18
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	19

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.

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Correlates of help-seeking by parents for the socio-emotional development of their 3-year-old children: a longitudinal study.

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Abstract

Objectives Timely parental help-seeking regarding their child's socio-emotional development is associated with a lower rate and lower severity of psychosocial problems in later life. This study aimed to examine the correlates of parental help-seeking for the socio-emotional development of 3-year-old children.

Design Retrospective cohort study.

Setting Community-based survey in Rotterdam.

Participants Of 2305 parents and their 2-year-old children at baseline, 1507 who completed follow-up questionnaires were included in the analyses when children were three years old.

Outcome measures Parental help-seeking regarding their child's socio-emotional development and types of formal and informal help sources (e.g. General practitioner, internet) used in the past 12 months were measured. Hierarchical logistic regression models were applied to identify factors correlates of parental help-seeking among thirteen predisposing, enabling, and need factors according to Andersen's Behavioral Model.

Results In total, 22.6% of parents reported help-seeking in the past 12 months for socio-emotional development of their 3-year-old child; 6.8% addressed formal help sources and 17.5% addressed informal help sources. General practitioner (2.7%) and family (12.5%) were the most frequently used formal and informal sources, respectively. In the full model, predisposing factors associated with higher odds of parental help-seeking were child's other western ethnic background (OR=1.66, 95%CI: 1.02-2.68) and parental age =< 29 years old (OR=1.71, 95%CI: 1.01-2.92). No associated factors were found among enabling factors. The need factors associated with a higher odds of parental help-seeking were having previous help-seeking (OR=2.52, 95%CI: 1.83-3.48) and discussing child's socio-emotional development in the well-child visit (OR=2.47, 95%CI: 1.73-3.53).

Conclusions Predisposing and need factors were associated with parental help-seeking for socio-emotional development of 3-years-old children. The findings can be used to further develop support for parents accessing adequate information, prevention, and anticipatory care with regard to the child's socio-emotional development.

Strengths and limitations of this study

- A longitudinal dataset was realized from a diverse community population.
- A broad assessment of potential factors associated with parental help-seeking behavior, including predisposing, enabling, and need factors following Andersen's Behavioral Model, was performed.
- In total 14 formal and informal types of help-seeking sources were studied.
- Self-reported help-seeking behavior can be subject to social desirability bias and recall bias.
- Generalization is limited to the sample under study, the participation rate and loss to follow up were considerable.

Introduction

Psychosocial problems, such as attention deficit hyperactivity disorders (ADHD), conduct disorders, and anxiety disorders, are relatively common among young children.[1, 2] The literature suggests that 7%–25% of children worldwide experience psychosocial problems in early childhood (0-6 years).[3-8] Significantly, these psychosocial problems can track into adulthood.[9-11] Timely detection of (risk for) psychosocial problems and, consequently, offering appropriate interventions in early childhood can reduce problems and improve children's cognitive and academic performance.[1, 2, 5]

In order to identify psychosocial problems, validated instruments are often used for diagnosing emotional and behavioral problems in children under 18 years old.[12 13-15] At younger ages, certain behaviors (e.g. hitting, tantrums) can to some extent be part of the normal healthy development of psychosocial behavior of a child.[16] Therefore, for younger children instruments such as the Brief Infant–Toddler Social and Emotional Assessment (BITSEA) are used to detect 'at risk' behavior. Studies show that children's 'at-risk' behavior can change to not at-risk and vice versa over time.[17, 18] Since young children's ability to express their psychosocial well-being is developing, parents and professionals have an important role in monitoring the child's socio-emotional development[19-21] It is estimated that approximately one-third of parents seek help for the socio-emotional development of their children aged 4 to 11 who are at risk of psychosocial problems.[22-25] It is therefore important that parents take action for their concerns about their child's socio-emotional development to determine whether and what type of support is needed.

Help-seeking for such concerns might be guided by several factors, and, in this regard, Andersen and Newman provide a framework for health service use.[26] The framework postulates that the behavior of health service use depends on the three core groups of factors: (1) predisposing factors (demographic and social characteristics); (2) enabling factors (the ability to access services) and (3) need factors (the internal and external need for health care services). Previous studies have found that predisposing factors, such as child's ethnic background and gender, are associated with parental help-seeking.[27-31] Enabling factors, such as parents with higher educational levels and higher incomes, have been shown to positively encourage parents to seek help for their child's problem behavior (4-14 years old).[32, 33] An important need factor that has been reported to increase help-seeking by parents is recognition of the child's problem (6-11 years old).[23, 24, 34] Meanwhile, single-parent families, the high cost of professional mental health services, and the self-stigma of parents have been indicated as barriers to help-seeking for children's socio-emotional development (3-11 years old).[24, 35-37] Thus far, research about parental help-seeking for the socio-emotional development has focused on school-aged children (4-12 years old) and adolescents (12-18 years old) rather than preschool children (0-4 years old).[29, 30, 33, 38, 39]

In the literature so far, parental help-seeking for socio-emotional problems of preschool children is rarely reported. Also, studies regarding parental help-seeking and children's socio-emotional problems are often evaluating on a limited number of potential correlates.[40] The current study aimed to identify correlates of parental help-seeking regarding the socio-emotional development of 3-year-old children. Following the Andersen & Newman framework, we studied the association between parental help-seeking and the three core factors: predisposing, enabling, and need factors. In addition, we explored the formal and informal help sources used in help-seeking.

Methods

Study design and population

For the present study, data were collected by parental questionnaires when the child was 2 years old and again with a follow up at 3 years old. In 2014 and 2015, parents living in the Rotterdam–Rijnmond area were invited by letter to participate in the study with their 2-year-old child. Parents were asked to complete and return the baseline questionnaire accompanied with a signed informed consent form when they visited the Dutch Preventive Youth Health Care (YHC) center for their regular well-child visit. In the Netherlands, regular well-child visits are one element of YHC which is offered free of charge to monitor and promote the health, well-being, and

development of children aged 0-19 years.[39, 41, 42] One year later, parents enrolled in the study received the follow-up questionnaire by e-mail or by mail with the request to return the completed questionnaire to the researchers in a pre-paid envelope.

From November 2014 to August 2015, 8937 parents attended for their 2-year child well-child visit, according to the YHC register. Of these, 2316 parents gave their consent to participate in the study (participation rate=25.9%) and 2305 parents completed the first questionnaires (response rate=99.5%). At the one-year follow-up, 1540 parents completed the second questionnaire. Children whose questionnaires were filled in by other caregivers instead of their parents (n=33) were excluded. Thus, 1507 participants were included in the analyses of this study (see Figure 1).

Parental help-seeking

When the children were 3 years old, parental help-seeking was assessed by asking parents whether they had sought help in the past 12 months with regard to issues with their child's behavior or socio-emotional development. Parents could indicate yes/no whether they sought help at one or more of the following formal and informal help sources: 1) general practitioner (GP), 2) youth protection services, 3) mental health care professionals (e.g., psychiatrist and child psychiatry outpatient clinic), 4) parenting support service (e.g., parenting courses and pedagogue service), 5) social worker, 6) family, 7) friend/acquaintance/neighbor, 8) internet, 9) complementary medicine (e.g., homoeopathy), 10) emergency telephone service, 11) prayer house (e.g., church, mosque or synagogue). There was an open answer possibility for parents to report other sources, and answers were recoded into the existing response categories or recoded into the new generated options: 12) book/magazines, 13) daycare center/school and 14) specialized medical care (e.g., clinical, rehabilitation). Parents could choose multiple options. When the parent chose one of the above options, one point was scored. A total score was generated by summing up all confirmatory responses (range 0-14). Total scores were dichotomized into 'no' (none confirmatory options) indicating parents did not seek help from any sources and 'yes' (one or more confirmatory options) indicating parent sought help from one or more help sources for children's socio-emotional development in the past 12 months.

Formal and informal help sources

The above response categories (1-14) were categorized into formal help sources and informal help sources. Formal help sources were GP (1), youth protection services (2), mental health care professionals (3), parenting support service (4), social worker (5), and specialized medical care (14). The remaining options were categorized as informal help: family (6),

friend/acquaintance/neighbor (7), internet (8), complementary medicine (9), emergency telephone service (10), prayer house (11), book/magazine (12) and daycare center/school (13). Scores within each category were added up and two variables were generated: 'formal help source used' and 'informal help source used'. For both variables, the responses were dichotomized into 'no' (total score=0) and 'yes' (total scores≥1).

Potential correlates of parental help-seeking

Predisposing factors

Predisposing factors included child age, child gender, child ethnic background, and parental age measured at child-age 2 years. Child age (in months) at time of measurement was calculated from the date of birth. Child ethnic background (Dutch, other western, non-western) was defined based on country of birth of both parents according to the Classification of Statistics Netherlands.[23, 43, 44] When both parents were born in the Netherlands, the child was considered to have a Dutch background. When one parent was born outside the Netherlands, this country of birth determined child's ethnic background. When both parents were born outside the Netherlands, mother's country of birth determined the child's ethnic background.[23, 43] Parental age (in years) was reported by parents at baseline and classified into three categories based on the distribution: '>=40 years', '30-39 years' and '=<29 years'.

Enabling factors

Enabling factors assessed at 24 months included parental educational level, parental work status, and family composition. Parental educational level was measured by one item asking about the highest level of education finalized by the respondent (mother or father) at 24 months. Educational level was categorized as high (higher vocational education, university), middle (higher secondary education, vocational education), or low (primary education, lower secondary education).[23, 44] Respondents to the questionnaire were asked to report their work status. Parental work status reflects in 89.3% the mother's employment and 10.7% the father's work status. Parental work status was classified as 'employed (including full-time job and part-time job)' and 'unemployed'. The family composition was categorized into two-parent family or one-parent family.

Need factors

Need factors assessed at 24 months included the BITSEA Problem and Competence scale, stressful life events, child's general health, parental satisfaction of child's development, previous help-seeking and discussing child's socio-emotional development in the well-child visit.

The BITSEA consists of a 31-item Problem scale and an 11-item Competence scale which measures psychosocial well-being in children 12-36 months. Each item is scored 0 for 'not true', 1 for 'somewhat true', and 2 for 'certainly true'.[45] The items from the two scales of BITSEA are summed up independently. A score of 14 or higher on the Problem scale was categorized as 'at risk of psychosocial problems', and a score of 15 or lower on the competence scale was termed as 'at risk of competence delay'.[13, 46] In the Dutch population, the BITSEA Problem and Competence scale respectively had internal consistency Cronbach's alphas of 0.76 and 0.63, test–retest reliability of 0.75 and 0.61, and interrater reliability correlations of 0.30 and 0.17.[47]

Stressful life events were measured by assessing the occurrence of twelve stressful life events, such as a family relocation, divorce, or financial problems. If an event had happened, parents indicated when the specific life event happened: last year, 1-2 years ago, 3-4 years ago, or more than 4 years ago. When parents confirmed the occurrence of one event within the past two years (the first two options), one point was scored. If one event happened two years ago, then the event was not counted as a stressful life event for the child. A total score was calculated by summing up the points assigned. The stressful life events variable was generated with two categories based on the total score: total score 0 indicating 'no' and ≥1 'yes'.

The child's general health (good vs poor) and parental satisfaction of the child's development (yes vs no) were measured by two subscales of the Infant Toddler Quality of Life Questionnaire of 47 items (ITQOL-SF47).[48] According to the user manual, the raw scores of each variable were transformed and dichotomized. The scores above the cut-off point indicated a child's good general health and parent-satisfied development, respectively.[49] The Dutch version of ITQOL-SF47 has relatively high reliability and validity: in this study the Cronbach's α >0.70, and all Test–retest Interclass Correlation Coefficients (ICCs) ⩾0.50.[50]

Previous help-seeking was assessed at 24 months with the question: 'Have you sought help for your child due to his/her socio-emotional development from the following sources in the past two years?'. The answer options (1-14) were the same as the help-seeking question at 36 months. These options were re-categorized in the same way: 'no' (none confirmatory options) and 'yes' (one or more confirmatory options).

The discussion of the child's socio-emotional development in the well-child visit was measured by one question: 'During the regular well-child visit with YHC when the child was two years old, were any specifics regarding your child's behavior, social, and emotional development discussed?' The options were 'no' and 'yes'.

Patient and public involvement statement

Neither patients nor the public was involved in the planning, design, conduct or reporting of this study.

Statistical analysis

Descriptive statistics were used to describe the characteristics of the study population. Hierarchical logistic regression models were fitted to investigate the correlates of help-seeking. Data were collected during the well-child visit when child was 2 years old, so the age of child was removed from the logistic regression analysis. All categorized variables were included as the independent variables by block. The Omnibus Test, a likelihood-ratio chi-square statistic, was used to assess the contribution of each block of variables to the model.[51] The first model (model 1) regarded predisposing variables as independent variables. The second model (model 2) additionally included enabling variables as independent variables. Finally, a third full model (model 3) with all variables from the three blocks was fitted. Descriptive statistics were used to describe formal and informal help-seeking of parents. Multicollinearity was examined using correlation analyses for categorical variables. Maximal coefficient r=0.254 indicated a weak correlation (0.2<r<0.4), therefore, all variables were included in the regression analyses.

Furthermore, we assessed interactions between the 13 potential correlates of help-seeking behavior and child gender, child ethnic background, parental age, and parental education level with regard to the association with help-seeking. After applying Bonferroni correction for multiple testing (p=0.05/42=0.001), no statistically significant interactions were found (Supplementary Table S1). A non-response analysis was conducted to assess differences between participants participating in follow-up and those lost to follow-up (Supplementary Table S2). The McNemar's test was applied to examine whether more parents used informal help sources among the parents who reported help-seeking (Supplementary Table S3). To provide more details, the characteristics of the study population by use of formal and those by use of informal sources were provided in the Supplementary Table S4.

Regarding the missing data among the sample of 1507 children, multiple imputation by Fully Conditional Specification (FCS) was used to deal with the missing values on all independent variables in SPSS.[52-54] The pooled results of five imputed datasets were used. Finally, we performed a sensitivity analysis using complete-case data without missing values to check the robustness of results (Supplementary Table S5). A p-value <0.05 was considered to be statistically significant. All analyses were completed using the IBM SPSS version 25 (IBM Corp., Armonk, NY, USA).

Results

Characteristics of the study population

Of all parents, 22.6% (n=341) reported help-seeking in the past 12 months for their 3-year-old child's psychosocial health; 6.8% (n=103) addressed formal help sources and 17.5% (n=264) addressed informal help sources. As for children, the mean age was 24.5 (SD=1.8) months (Table 1). Half of the children were boys (49.4%), 80.2% were Dutch, and 93.8% of the children lived in a two-parent family. Most parents were 30-39 years old (70.1%), employed (81.2%), and 59.6% had a high educational level.

Regarding comparison between parents with help-seeking experience and their counterparts, two predisposing factors child age (p>0.05) and child gender (p>0.05) were not significantly different.

Table 1. Characteristics of the study population (n=1507)

Items	Total (n=1507) Mean ± SD N(%)	Help-seeking No (n=1166) Mean ± SD N(%)	Help-seeking Yes (n=341) Mean ± SD N(%)	*p* value
Predisposing Factors				
Child age in months	24.5±1.8	24.5±1.8	24.5±1.9	0.802
Child gender				0.566
Boys	739 (49.4)	568 (49.0)	171 (50.7)	
Girls	758 (50.6)	592 (51.0)	166 (49.3)	
Child ethnic background				0.026*
Dutch	1161 (80.2)	917 (81.7)	244 (75.1)	
Other western	107 (7.4)	75 (6.7)	32 (9.8)	
Non-western	179 (12.4)	130 (11.6)	49 (15.1)	
Parental age in years				0.003**
>=40	166 (11.1)	140 (12.1)	26 (7.7)	
30-39	1048 (70.1)	818 (70.6)	230 (68.0)	
=<29	282 (18.9)	200 (17.3)	82 (24.3)	
Enabling Factors				
Parental educational level				0.003**
High	883 (59.9)	710(62.3)	173 (52.0)	
Middle	498 (33.8)	362 (31.8)	136 (40.8)	
Low	92 (6.2)	68 (6.0)	24 (7.2)	
Parental work status				< 0.001***
Employed	1195(81.8)	947 (83.9)	248 (74.7)	
Unemployed	266 (18.2)	182 (16.1)	84 (25.3)	
Family composition				0.004**
Two-parent family	1386 (93.8)	1084 (94.8)	302 (90.4)	

Single-parent family	92 (6.2)	60 (5.2)	32 (9.6)	
Need Factors				
BITSEA Problem scale score				< 0.001***
No risk	1400 (94.0)	1101 (95.6)	299 (88.5)	
At risk	90 (6.0)	51 (4.4)	39 (11.5)	
BITSEA Competence scale score				0.011*
No risk	1300 (88.0)	1017 (89.1)	283 (84.0)	
At risk	178 (12.0)	124 (10.9)	54(16.0)	
Stressful life events				< 0.001***
No	749 (51.0)	608 (53.5)	141 (42.3)	
Yes	720 (49.0)	528 (46.5)	192 (57.7)	
General health of the child [a]				0.007**
Good	1370 (92.2)	1070(93.2)	300 (88.8)	
Poor	116 (7.8)	78 (6.8)	38 (11.2)	
Parental satisfaction of child's development [b]				<0.001***
Yes	1380 (94.7)	1074(95.9)	306 (90.5)	
No	78 (5.3)	46(4.1)	32 (9.5)	
Previous help-seeking				<0.001***
No	1208 (82.2)	992 (87.1)	216 (65.5)	
Yes	261 (17.8)	147 (12.9)	114 (34.5)	
Discussion of child's socio-emotional development in the well-child visit				<0.001***
No	1196 (85.6)	980 (89.8)	216 (70.6)	
Yes	201 (14.4)	111 (10.2)	90 (29.4)	

Note: This table presents non-imputed data.

The missing numbers of variables are child gender (n=10), child ethnic background (n=60), parental age (n=11), parental educational level (n=34), parental work status (n=46), family composition (n=29), BITSEA Problem scale score (n=17), BITSEA Competence scale score (n=29), stressful life events (n=38), general health of the child (n=21), parental satisfaction of child's development (n=49), previous help-seeking (n=38), and discussion of child socio-emotional development in the well-child visit (n=110).

Data presented as mean ± SD or number (percentage). Significant differences between two subgroups of help-seeking and non-help-seeking parents were evaluated at 0.05 level using independent T tests for continuous variables and $\chi 2$ tests for categorical variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: SD=standard deviation; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

* p <0.05; ** p <0.01; *** p <0.001.

Correlates of parental help-seeking

Table 2 presents the results of logistic regression analyses. Model 1 with predisposing factors as independent factors showed that having an other-western ethnic background (OR=1.73, 95%CI: 1.10-2.71) and non-western ethnic background as a child (OR=1.51, 95%CI: 1.05-2.18) as well as parental age =< 29 years old (OR=2.28, 95%CI: 1.38-3.77) were associated with parental help-seeking.

Model 2 shows the association between predisposing factors and enabling factors. Of predisposing factors, having an other-western ethnic background (OR=1.66, 95%CI: 1.05-2.60) and parental age =<29 years old (OR=1.96, 95%CI: 1.17-3.27) were associated with parental help-seeking. Two enabling factors parental educational level (OR=1.36, 95%CI: 1.04-1.79) and parental employed status (OR=1.47, 95%CI: 1.07-2.02) were associated with parental help-seeking.

In the full model (model 3), two predisposing factors having an other-western ethnic background as a child (OR=1.66, 95%CI: 1.02-2.68) and parental age=<29 years old (OR=1.71, 95%CI: 1.01-2.92) were associated with a higher odds for parental help-seeking. No associations were found between enabling factors and parental help-seeking. Of the need factors, previous help-seeking (OR=2.52, 95%CI: 1.83-3.48) and discussion of child socio-emotional development in the well-child visit (OR=2.47, 95%CI: 1.73-3.53) were associated with a higher odds for parental help-seeking for socio-emotional development at child age 3 years.

Table 2. Associations between predisposing, enabling, and need factors and parental help-seeking in the past 12 months for the 3-year-old child (n=1507)

	Multivariate					
	Model 1		Model 2		Model 3	
	Predisposing variables		Plus enabling variables		Plus need variables	
Block Statistics	$\chi2 = 22.38$		$\chi2 = 16.79$		$\chi2 = 107.09$	
	OR	95% CI	OR	95% CI	OR	95% CI
Predisposing Factors						
Child gender						
Boys	Ref		Ref		Ref	
Girls	0.93	0.73-1.19	0.93	0.73-1.19	0.98	0.75-1.27
Child ethnic background						
Dutch	Ref		Ref		Ref	
Other western	1.73*	1.10-2.71	1.66*	1.05-2.60	1.66*	1.02-2.68
Non-western	1.51*	1.05-2.18	1.20	0.81-1.78	1.18	0.77-1.79
Parental age in year						
>=40	Ref		Ref		Ref	

30-39	1.56	0.99-2.46	1.57	1.00-2.46	1.45	0.90-2.32
=<29	2.28**	1.38-3.77	1.96*	1.17-3.27	1.71*	1.01-2.92
Enabling Factors						
Parental educational level						
High			Ref		Ref	
Middle			1.36*	1.04-1.79	1.30	0.97-1.74
Low			1.12	0.67-1.89	1.10	0.63-1.90
Parental work status						
Employed			Ref		Ref	
Unemployed			1.47*	1.07-2.02	1.28	0.91-1.80
Family composition						
Two-parent family			Ref		Ref	
Single-parent family			1.51	0.95-2.41	1.31	0.80-2.15
Need Factors						
BITSEA Problem scale score						
No risk					Ref	
At risk					1.20	0.72-1.99
BITSEA Competence scale score						
No risk					Ref	
At risk					1.18	0.78-1.79
Stressful life events						
No					Ref	
Yes					1.29	0.98-1.68
General health of the child [a]						
Good					Ref	
Poor					1.16	0.73-1.85
Parental satisfaction of child's development [a]						
Yes					Ref	
No					1.35	0.75-2.45
Previous help-seeking						
No					Ref	
Yes					2.52***	1.83-3.48
Discussion of child socio-emotional development in the well-child visit						
No					Ref	
Yes					2.47***	1.73-3.53

Abbreviation: OR=Odds Ratio; CI=Confidence Interval; BITSEA= Brief Infant–Toddler Social and Emotional Assessment. $\chi 2$ = Model chi-square for each block of variables, all significant at p <0 .05.

Model 1: The model with predisposing factors as independent variables.

Model 2: The model with predisposing and enabling factors as independent variables.

Model 3: The full model with predisposing, enabling, and need factors as independent variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

* p <0.05; ** p <0.01; *** p <0.001

Use of formal and informal help sources

Table 3 shows the frequency of formal and informal help sources used in parental help-seeking for their 3-year-old child's socio-emotional development in the past 12 months. Among the 341 parents who reported help-seeking, fewer parents (n=163) reported the use of formal help sources than parents (n=264) who reported the use of informal help sources (p<0.001, Supplementary Table S3); only 26 (7.6%) parents used both formal and informal help sources. The GP (12.0%) and parenting support services, such as parenting courses (9.4%), were the most frequently used formal help source. Family (55.4%) and friends/acquaintance/neighbor (40.5%) were the most frequently used informal help sources. Characteristics of the study population by use of formal and informal sources in parental help-seeking are presented in Supplementary Table S4.

Table 3. Use of formal and informal help sources in parental help-seeking in the past 12 months for the 3-year-old child (n=1507)

	n	Total sample (%)	Help-seeking (Yes) (%)
		(n=1507)	(n=341)
Parents reported use of help sources (yes)	341	22.6	100.0
Formal and informal help sources	26	1.7	7.6
Formal help source(s) only	77	5.1	22.6
Informal help source(s) only	238	15.8	69.8
Type of help sources			
Formal Sources (yes)	103	6.8	30.2
General practitioner	41	2.7	12.0
Parenting support service	32	2.1	9.4
Specialized medical care	20	1.3	5.9
Youth protection services	18	1.2	5.3
Mental health care professionals	11	0.7	3.2
Social worker	1	0.1	0.3
Informal Sources (yes)	264	17.5	77.4
Family	189	12.5	55.4
Friend/acquaintance/neighbor	138	9.2	40.5
Internet	71	4.7	20.8
Daycare center/school	12	0.8	3.5
Complementary medicine	4	0.3	1.2
Emergency telephone service	3	0.2	0.9
Book/magazine	2	0.1	0.6
Prayer house	1	0.1	0.3

Note. Parents could endorse more than one option; hence, the sum of each subcategory does not total up to 100%.

Additional data analyses

Compared to participants lost in the follow-up (n=775), participants in the follow-up (n=1540) were, as a child, more likely to be at a younger age and have a Dutch ethnic background and, as a parent, to be at an older age and have a higher educational level (all $p<0.001$). No significant differences were found between boys and girls ($p>0.05$) (Supplementary Table S2).

Supplementary Table S5 shows the results of multivariate logistic regression conducted with complete data. There was a difference between the full models of multivariate logistic regression conducted with non-imputed data and those with imputed data. In the imputed data analysis, parents of a child with other-western ethnic background (OR=1.66, 95%CI: 1.02-2.68) in the predisposing block were more likely to have help-seeking. This association was not significant (OR=1.51, 95%CI: 0.87-2.63) in the analysis conducted with complete data. On the other hand, stressful life events (OR=1.45, 95%CI: 1.07-1.96) in the need block were associated with help-seeking in the complete data analysis but not in the imputed data analysis (OR=1.29, 95%CI: 0.98-1.68). Although the significance of the two factors changed, the pattern of relevant factors was similar. The rest of the factors in three blocks kept the same association and significance in the imputed data analysis and the complete data analysis, thereby indicating the robustness of the model. Furthermore, we conducted the Chi-square test of homogeneity, which showed that there were no significant differences (all p-values >0.05) between the characteristics of the imputed data and the complete data (Supplementary Table S6).

Discussion

In the present study, correlates of parental help-seeking for the socio-emotional development of 3-year-old children were studied. Among predisposing factors, having an other-western ethnic background as a child and parental age younger than 29 years old indicated a higher odds of parental help-seeking for the socio-emotional development of children aged 3 years. Also, previous help-seeking and discussing the child's socio-emotional development in the well-child visit as need factors were associated with a higher odds for parental help-seeking. No correlate of parental help-seeking was found among enabling factors.

In the present study predisposing, enabling, and need factors were evaluated in relation to help-seeking behavior. The Andersen & Newman's framework composes of environment, population characteristics, health behavior, and outcome related to help-seeking behavior.[55] In the current study the information on the environment (including the health care system and external environment), and the information on the outcome (including perceived health status, evaluated health status, and consumer satisfaction) was not collected. We recommend future studies to get a complete overview of factors associated with help-seeking behavior. The findings of predisposing factors indicated parents of child with other-western background were more like to seek help, compared with parents of Dutch children. Existing studies on the association between minority ethnic background and help-seeking for children's socio-emotional development have shown conflicting results.[29, 39, 56, 57] These differing results may be due to the different characteristics of minor ethnic backgrounds as well as differing help-seeking measures among the studies.[22, 39] Although parents of children from minority ethnic background perceived more barriers to access formal help-seeking, studies report these parents are able to access informal help sources as easily and as equally to native parents [35, 58-60] Moreover, the health care framework in the Netherlands (e.g. equal primary care, collaboration of professionals in the community, universal health care), and social contexture (e.g. language and cultural similarity) may partly reduce barriers to health care among the parents with other-western background.[61-63] Besides the child's other-western background, as a predisposing factor, parental age was also associated with help-seeking: younger parents were more likely to seek help for their 3-year-old child. Previous studies have reported first-time parents to be more open and actively involved in searching for information about parenting and child development.[64] First-time parents are also more likely to reach out for help.[65] In the current study, we were unable to adapt for the parity of the child; therefore, we were not able to evaluate whether this explanation might hold for our findings.

With regard to enabling factors without correction for the need factors, parental educational level and employment status were associated with help-seeking. After correction for the need factors, parental educational level, employment status and family composition were not significantly associated. Studies

on association between three enabling factors and help-seeking have reported contrary results. In the Netherlands, equal access to primary care (e g. GPs and YHC), to comprehensive care professionals in clinics and communities, and to universal health care may reduce the barriers for parents in the enabling domain.[61, 62] Similar results have been found in other studies conducted in a similar context.[60, 66, 67]

The need factors in the Andersen & Newman's framework consist of perceived need and evaluated need.[55] Parent-reported general health of the child and parental satisfaction with child's development reflect most closely the perceived need, while the BITSEA-score and discussion with YHC professionals most closely reflect the evaluated need (i.e., being more clinical assessments). With regard to need factors, we observed that parents seeking any help for their child's socio-emotional development before the age of 2 years were more likely to seek help in the past 12 months at child age 3 years. It is plausible that parents who had previous help-seeking may be able to deal better with barriers (e.g. parents' self-stigma) and with exploring more sources in terms of help-seeking.[39] In addition, the literature regarding the use of mental health service for children and adolescents suggests that social and emotional problems exist over a longer period of time.[30, 68] Therefore, it is suggested that for actual problem behavior longitudinal care is needed.[11, 25, 69] Consequently, findings underline the importance of YHC in monitoring advice for children's socio-emotional development. Furthermore, parents who had previously discussed their child's socio-emotional development in the well-child visit at the child age of 2 years, were more likely to seek help in the past 12 months. In the Netherlands, the discussion during the well-child visit could be raised by parents or YHC professionals. The YHC professionals can suggest a discussion based on the evaluation of the child's socio-emotional development. Parents also can consult on this issue if they are concerned about their child's socio-emotional development. In this capacity, the YHC professional assists the parent to recognize early childhood psychosocial problems. Although recognition of problem behavior by parents has been reported to be difficult for parents, it is important for them to be able to seek help in time.[5, 20, 23, 28, 29] The YHC thus plays a crucial role in screening and identifying children's social and emotional problems in the Netherlands.[70]

In total, 6.0% of 1507 children were at risk of socio-emotional problems measured by BITSEA Problem scale, and 12% were at risk of delay of socio-emotional competence measured by BITSEA Competence scale. The rates of socio-emotional development problems in this study were comparable with these measured by other instruments, such as 17% at moderate risk and 11% at high risk of developmental delays measured by the Parent Evaluation of Developmental Status among children (0-5 years old) in the American National Survey of Children's Health.[71, 72] Consistent with previous studies in school-aged children, our results showed that formal help sources were used less frequently than informal help sources for children's socio-emotional development.[24, 34] Gaining access to formal help sources may have

more barriers, such as iterative referral processes, long waiting times, and high costs.[35, 58, 73] The informal help sources most often used in this study were the parental social network as well as information from books and the internet.[59, 74] Accordingly, compared with formal help sources, informal help sources might be more directly available and accessible for parents when they are seeking help for their children's socio-emotional development.[27, 73]

Timely parental help-seeking for the socio-emotional development of children is associated with a lower rate and lower severity of psychosocial problems in later life.[1, 2, 5] This study provides insight into parental help-seeking when their children are very young. The findings indicated that parents of preschool children for example most frequently used help sources close by, such as family, whilst books and magazines were less frequently utilized. In addition, investments might be made towards improving parents' access to formal health care use for their children (e.g., provide the access to online consultation given by psychological professionals). Previous research has suggested, especially among non-native parents, limited and difficult access to health care facilities.[28, 75] Longitudinal and experimental studies are recommended to examine the differential pathways between parent-perceived versus diagnosed child psychosocial problems and the use of health care. A range of factors should be studied as contemplated by the Andersen model; taking into account access parents have to health care, but also barriers they perceive to make use of health care. Qualitative and quantitative methods should be combined.

The present study has several strengths. First, the longitudinal correlates between predisposing, enabling, and need factors and parental help-seeking were studied among a large community sample of parents of 3-year-old children. Parental help-seeking for children under 4 years old is rarely studied.[22, 24, 34] Second, formal and informal help sources in parental help-seeking were included. Specifically, a broad range of informal help sources, e.g., internet, books, complementary medicine and religious institutes were assessed. Nevertheless, there were some limitations that need to be addressed. First, help-seeking for perceived social and emotional problems was parent-reported. Parents may have under- or overestimated their child's socio-emotional development. The assessment focussed on parents' perceived socio-emotional problems contrary to a clinical diagnosis. In our analyses, we did correct for risk of psychosocial problems at age 2-years, assessed by the BITSEA. A combination of clinical diagnose instruments, such as the Child Behavior Checklist (CBCL), with parent perceived problems may contribute to a better understanding of parental help-seeking behavior.[14] Second, information on the help-seeking is self-reported and recall bias is possible; however, the one-year recall might have decreased recall inaccuracy.[76] Third, the multivariate regression analyses showed a slight difference between results conducted with the complete data and those with the imputed data. Therefore, we assessed the homogeneity of the above two datasets (Supplementary Table S6) and found no significant difference in

the characteristics of the two populations (p>0.05). Fourth, a limitation is the participation rate and the loss to follow-up in the present study. The participation rate was 25.9% which is lower than reported participation rates in large birth cohorts (around 30-40%).[77] We were not able to receive information from parents themselves as to why they refused to participate. Common reasons for non-participation are a lack of interest or a lack of time.[78,79] In addition, we cannot ascertain that all parents received the invitation to participate nor that they actually visited YHC at the child aged 2 years. Furthermore, the parents with a younger child, a Dutch ethnic background, an older age, and a higher education level were more likely to participate in the follow-up of the study. Consequently, the findings are applicable to the population under study. Regardless, efforts should be made to involve hard-to-reach populations in research studies. Finally, a lack of repeated measurements did not allow us to establish the causal association in the current study.

Conclusion

The predisposing, enabling, and needs factors correlated with help-seeking by parents of preschool children with regard to their child's socio-emotional development were evaluated. The factors non-western ethnic background, younger age of the parent, previous help-seeking and specific discussions about the child's socio-emotional development during the well-child visit were associated with the presence of parental help-seeking. Parents reported using informal help sources more often than formal help sources. The findings can be used to further develop support for parents to access adequate information, prevention, and anticipatory care with regard to their child's socio-emotional development.

Footnotes

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Ethics approval: The Medical Ethical Committee of the Erasmus Medical Center Rotterdam declared that the Medical Research Involving Human Subject Act (Dutch abbreviation WMO) did not apply to the present study and, subsequently, permission was given to carry out the study and to publish the results in scientific journals (number MEC-2014-152). This study was conducted by following the guidelines proposed in the World Medical Association Declaration of Helsinki.

Contributors: HR obtained the funding. HR, AG, and RB managed the research and undertook data collection. CBF, JL, AG, and HR conceived the research described in this paper. JL analyzed the data. All authors provided input in interpreting the data. JL drafted the manuscript with input of AG , CBF, HR and GB. All authors critically reviewed and approved the manuscript.

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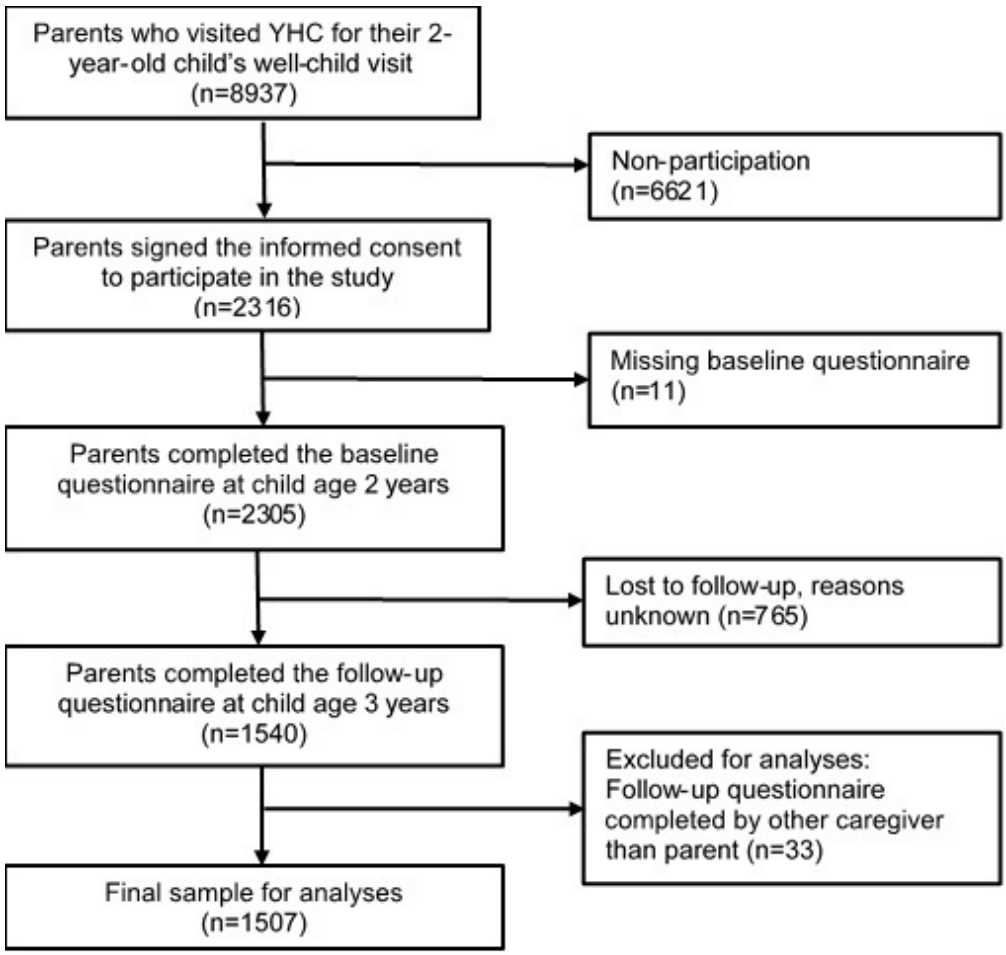

Figure 1. Population of Analysis

42x46mm (300 x 300 DPI)

Supplementary Materials [Tables]

Title: Correlates of help-seeking by parents for the socio-emotional development of their 3-year-old children: a longitudinal study.

Journal: BMJ Open

Authors: Jie Luo, Hein Raat, Carmen B. Franse, Rienke Bannink, Guannan Bai, Amy van Grieken

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Supplementary Table S1. *P*-values for interactions between the 13 factors and child gender, child ethnic background, parental age and parental education level on help-seeking (n=1507)

	Child gender	Child ethnic background	Parental age	Parental education level
	p value	*p* value	*p* value	*p* value
Child gender	-	0.877	0.537	0.751
Child ethnic background	0.877	-	0.049	0.981
Parental age	0.537	0.049	-	0.829
Parental education level	0.751	0.981	0.829	-
Parental work status	0.325	0.909	0.841	0.069
Family composition	0.226	0.078	0.887	0.194
BITSEA Problem scale score	0.419	0.373	0.074	0.969
BITSEA Competence scale score	0.414	0.853	0.406	0.100
Stressful life events	0.003	0.518	0.786	0.033
General health of the child	0.893	0.171	0.442	0.271
Parental satisfaction of child's development	0.446	0.307	0.350	0.347
Previous help-seeking behavior	0.274	0.619	0.159	0.567
Discussion of child social-emotional development in the well-child visit	0.552	0.193	0.126	0.731

Note: numbers in table are p-values of interaction of the variables in rows and columns.
Abbreviations: BITSEA= Brief Infant–Toddler Social and Emotional Assessment.
Multivariate logistic regression was adopted for interaction analyses in the full model with predisposing variables, enabling variables and need variables as independent variables. After applying Boneferroni correction for multiple testing (P=0.05/42=0.001), no statistically significant interaction was found.

Supplementary Table S2. Non-response analyses (n = 2305)

	Total (n=2305) Mean ± SD N(%)	Response to follow-up		*p* value
		No (n=765) Mean ± SD N(%)	Yes (n=1540) Mean ± SD N(%)	
Child age in months	24.6±1.8	24.8±1.6	24.5±1.8	<0.001
Child gender				0.155
Boy	1159 (50.6)	401 (52.7)	758 (49.5)	
Girl	1132 (49.4)	360 (47.3)	772 (50.5)	
Child ethnic background				<0.001
Dutch	1576 (73.3)	415 (58.9)	1161 (80.2)	
Other western	166 (7.7)	59 (8.4)	107 (7.4)	
Non-western	409 (19.0)	230 (32.7)	179 (12.4)	
Parental age in year				<0.001
>=40	262 (22.6)	89 (11.8)	173 (11.3)	
30-39	1500 (65.9)	438 (58.2)	1062 (69.6)	
=<29	515 (11.5)	225 (29.9)	290 (19.0)	
Parental education level				<0.001
High	1175 (52.8)	282 (39.1)	893 (59.5)	
Middle	858 (38.6)	345 (47.8)	513 (34.2)	
Low	191 (8.6)	95 (13.2)	96 (6.4)	

Note: This table present non-imputed data. The missing numbers of variables are child age (n=32), child gender (n=16), child ethnic background (n=165), parental age (n=39), parental educational level (n=92).

Abbreviation: SD=standard deviation.

P values are based on Independent t-test and chi-square test for non-response to follow-up and response groups.

Supplementary Table S3. McNemar's test for homogeneity of formal sources use and informal sources use (n=341)

	Informal sources use		*p* value
	Yes (n=264)	No (n=77)	
Formal sources use			
Yes (n=103)	26	77	<0.001
No (n=238)	238	0	

P value is based on the McNemar's test.

Supplementary Table S4. Characteristics of the study population by use of formal and informal sources in parental help-seeking (n=1507)

	Total	Use of formal sources			Use of Informal sources		
		No	Yes		No	Yes	
	(n=1507) Mean ± SD N(%)	(n=1404) Mean ± SD N(%)	(n=103) Mean ± SD N(%)	*p* value	(n=1243) Mean ± SD N(%)	(n=264) Mean ± SD N(%)	*p* value
Predisposing Factors							
Child age in month	24.5±1.8	24.5±1.9	24.5±1.6	0.920	24.5±1.8	24.5±2.0	0.593
Child gender				0.029			0.648
Boys	739 (49.4)	678 (48.6)	61 (59.8)		614 (49.6)	125 (48.1)	
Girls	758 (50.6)	717 (51.4)	41 (40.2)		623 (50.4)	135 (51.9)	
Child ethnic background				0.020			0.508
Dutch	1161 (80.2)	1093 (81.0)	68 (69.4)		966 (80.8)	195 (77.7)	
Other western	107 (7.4)	96 (7.1)	11 (11.2)		85 (7.1)	22 (8.8)	
Non-western	179 (12.4)	160 (11.9)	19 (19.4)		145 (12.1)	34 (13.5)	
Parental age in year				0.285			0.001
>=40	166 (11.1)	155 (11.1)	11 (10.9)		149 (12.1)	17 (6.5)	
30-39	1048 (70.1)	983 (70.5)	65 (64.4)		870 (70.6)	178 (67.7)	
=<29	282 (18.9)	257 (18.4)	25 (24.8)		214 (17.4)	68 (25.9)	
Enabling Factors							
Parental education level				0.001			0.170
High	883 (59.9)	841 (61.1)	42 (43.3)		740 (61.1)	143 (54.8)	
Middle	498 (33.8)	449 (32.6)	49 (50.5)		399 (32.9)	99 (37.9)	
Low	92 (6.2)	86 (6.3)	6 (6.2)		73 (6.0)	19 (7.3)	
Parental work status				0.006			0.015
Employed	1213(81.2)	1125 (82.5)	70 (71.4)		996 (82.9)	199 (76.5)	
Unemployed	280 (18.8)	238 (17.5)	28 (28.6)		205 (17.1)	61 (23.5)	
Family composition				0.210			0.054
Two-parent family	1386 (93.8)	1297 (94.0)	89 (90.8)		1149 (94.3)	237 (91.2)	
Single-parent family	92 (6.2)	83 (6.0)	9 (9.2)		69 (5.7)	23 (8.8)	
Need Factors							
BITSEA Problem scale score				<0.001			0.021
No risk	1400 (94.0)	1319 (95.0)	81 (80.2)		1161 (94.6)	239 (90.9)	
At risk	92 (6.0)	70 (5.0)	20 (19.8)		66 (5.4)	24 (9.1)	
BITSEA Competence scale score				0.001			0.352
No risk	1300 (88.0)	1222 (88.7)	78 (77.2)		1074 (88.3)	226 (86.3)	
At risk	178 (12.0)	155(11.3)	23(22.8)		142 (11.7)	36 (13.7)	

Stressful life events				0.048		0.001
No	749 (51.0)	708 (51.7)	41 (41.4)		641 (53.0)	108 (41.7)
Yes	720 (49.0)	662 (48.3)	58 (58.6)		569 (47.0)	151 (58.3)
General health of the child [a]				0.007		0.153
Good	1370 (92.2)	1283(92.7)	87 (85.3)		1135 (92.7)	235 (90.0)
Poor	116 (7.8)	101 (7.3)	15 (14.7)		90 (7.3)	26 (10.0)
Parental satisfaction of child's development [b]				<0.001		0.366
Yes	1380 (94.7)	1297(95.6)	83 (81.4)		1135 (94.9)	245 (93.5)
No	78 (5.3)	59(4.4)	19 (18.6)		61 (5.1)	17 (6.5)
Previous help-seeking				<0.001		<0.001
No	1208 (82.2)	1151 (83.9)	57 (58.8)		1039 (85.8)	169 (65.5)
Yes	261 (17.8)	221 (16.1)	40 (41.2)		172 (14.2)	89 (34.5)
Discussion of child socio-emotional development in the well-child visit				<0.001		<0.001
No	1196 (85.6)	1148 (88.0)	48 (52.2)		1017 (87.6)	179 (75.8)
Yes	201 (14.4)	157 (12.0)	44 (47.8)		144 (12.4)	57 (24.2)

Note: This table presents non-imputed data. The missing numbers of variables are parental age (n=11), child gender (n=10), child ethnic background (n=60), parental educational level (n=34), parental work status (n=46), family composition (n=29), BITSEA Problem scale score (n=17), BITSEA Competence scale score (n=29), stressful life events (n=38), general health of the child (n=21), parental satisfaction of child's development (n=49), previous help-seeking (n=38), and discussion of child socio-emotional development in the well-child visit (n=110).

Data presented as mean ± SD or number (percentage). Significant differences between two subgroups of help-seeking and non-help-seeking parents were evaluated at 0.05 level using independent T tests for continuous variables and $\chi 2$ tests for categorical variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: SD=standard deviation; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

The bold print indicates p <0.05.

Supplementary Table S5. Multivariate logistic regression model on independent factors and help-seeking with complete data (n=1168)

	Model 1		Model 2		Model 3	
	Predisposing variables		Plus enabling variables		Plus need variables	
Block Statistics	χ2 = 22.08		χ2 = 14.11		χ2 = 93.56	
	OR	95% CI	OR	95% CI	OR	95% CI
Predisposing Factors						
Child gender						
Boy	Ref		Ref		Ref	
Girl	0.86	0.65-1.14	0.86	0.65-1.14	0.93	0.69-1.25
Child ethnic background						
Dutch	Ref		Ref		Ref	
Other western	1.51	0.90-2.54	1.45	0.86-2.44	1.51	0.87-2.63
Non-western	1.52	1.00-2.33	1.21	0.77-1.90	1.18	0.72-1.91
Parental age in year						
>=40	Ref		Ref		Ref	
30-39	1.67	0.97-2.88	1.72	0.99-2.96	1.51	0.86-2.65
=<29	2.87***	1.59-5.18	2.53**	1.39-4.59	2.23*	1.20-4.15
Enabling Factors						
Parental education level						
High			Ref		Ref	
Middle			1.27	0.93-1.73	1.24	0.89-1.71
Low			1.00	0.52-1.94	0.93	0.46-1.87
Parental work status						
Employed			Ref		Ref	
Unemployed			1.59*	1.11-2.27	1.32	0.90-1.95
Family composition						
Two-parent family			Ref		Ref	
Single-parent family			1.66	0.91-3.03	1.46	0.77-2.75
Need Factors						
BITSEA Problem scale score						
No risk					Ref	
At risk					0.96	0.51-1.81
BITSEA Competence scale score						
No risk					Ref	
At risk					1.35	0.85-2.14

Stressful life events		
No	Ref	
Yes	1.45*	1.07-1.96
General health of the child [a]		
Good	Ref	
Poor	1.25	0.73-2.14
Parental satisfaction of child's development [b]		
Yes	Ref	
No	1.58	0.81-3.09
Previous help-seeking		
No	Ref	
Yes	2.71***	1.90-3.88
Discussion of child social and emotional development in the well-child visit		
No	Ref	
Yes	2.67***	1.82-3.92

Model 1: The model with predisposing factors as independent variables.
Model 2: The model with predisposing and enabling factors as independent variables.
Model 3: The full model with predisposing, enabling, and need factors as independent variables.
a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).
b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).
Abbreviation: OR=Odds Ratio; CI=Confidence Interval; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.
* p <0.05; ** p <0.01; *** p <0.001.

Supplementary Table S6. Chi-square test for homogeneity of complete data and imputed data

	Complete data (n=1168) N(%)	Imputed data (n=1507) N(%)	*p* value
Predisposing Factors			
Child gender			
Boy	569 (48.7)	744 (49.4)	0.737
Girl	599 (51.3)	763 (50.6)	
Child ethnic background			
Dutch	959 (82.1)	1202(79.8)	0.260
Other western	83 (7.1)	113 (7.5)	
Non-western	126 (10.8)	192 (12.7)	
Parental age in year			
>=40	123 (10.5)	167 (11.1)	0.899
30-39	825 (70.6)	1056 (70.1)	
=<29	220 (18.8)	284 (18.8)	
Enabling Factors			
Parental education level			
High	717 (61.4)	901 (59.8)	0.394
Middle	391 (33.5)	511 (33.9)	
Low	60 (5.1)	95 (6.3)	
Parental work status			
Employed	958 (82.0)	1227 (81.4)	0.690
Unemployed	210 (18.0)	280 (18.6)	
Family composition			
Two-parent family	1111 (95.1)	1407 (93.4)	0.055
Single-parent family	57 (4.9)	100 (6.6)	
Need Factors			
BITSEA Problem scale score			
No risk	1103 (94.4)	1411 (93.6)	0.385
At risk	65 (5.6)	96 (6.4)	
BITSEA Competence scale score			
No risk	1045 (89.5)	1318 (87.5)	0.108
At risk	123 (10.5)	189 (12.5)	
Stressful life events			
No	606 (51.9)	769 (51.0)	0.661
Yes	562(48.1)	738 (49.0)	
General health of the child [a]			
Good	1081 (92.6)	1390 (92.2)	0.761

Poor	87 (7.4)	117 (7.8)	
Parental satisfaction of child's development [b]			
Yes	1112 (95.2)	1428 (94.6)	0.453
No	56 (4.8)	82 (5.4)	
Previous help-seeking			
No	971 (83.1)	1236 (82.0)	0.451
Yes	197 (16.9)	271 (18.0)	
Discussion of child social and emotional development in the well-child visit			
No	1010 (86.5)	1287 (85.4)	0.430
Yes	158 (13.5)	220 (14.6)	

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

P values are based on the independent chi-square test for complete data and imputed data groups.

STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3,4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4,5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	5
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	-
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5,6,7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	-
Bias	9	Describe any efforts to address potential sources of bias	-
Study size	10	Explain how the study size was arrived at	-
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	-
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	8
		(*d*) If applicable, explain how loss to follow-up was addressed	-
		(*e*) Describe any sensitivity analyses	8
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	Figur2
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9
		(b) Indicate number of participants with missing data for each variable of interest	10
		(c) Summarise follow-up time (eg, average and total amount)	-
Outcome data	15*	Report numbers of outcome events or summary measures over time	9

Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (*b*) Report category boundaries when continuous variables were categorized (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	12,13 - -
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	15
Discussion			
Key results	18	Summarise key results with reference to study objectives	16
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	17,18
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18
Generalisability	21	Discuss the generalisability (external validity) of the study results	18
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	19

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.

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Correlates of help-seeking by parents for the socio-emotional development of their 3-year-old children: a longitudinal study.

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Abstract

Objectives Timely parental help-seeking regarding their child's socio-emotional development is associated with a lower rate and lower severity of psychosocial problems in later life. This study aimed to examine the correlates of parental help-seeking for the socio-emotional development of 3-year-old children.

Design Retrospective cohort study.

Setting Community-based survey in Rotterdam.

Participants Of 2305 parents and their 2-year-old children at baseline, 1507 who completed follow-up questionnaires were included in the analyses when children were three years old.

Outcome measures Parental help-seeking regarding their child's socio-emotional development and types of formal and informal help sources (e.g. General practitioner, internet) used in the past 12 months were measured. Hierarchical logistic regression models were applied to identify factors correlates of parental help-seeking among thirteen predisposing, enabling, and need factors according to Andersen's Behavioral Model.

Results In total, 22.6% of parents reported help-seeking in the past 12 months for socio-emotional development of their 3-year-old child; 6.8% addressed formal help sources and 17.5% addressed informal help sources. General practitioner (2.7%) and family (12.5%) were the most frequently used formal and informal sources, respectively. In the full model, predisposing factors associated with higher odds of parental help-seeking were child's other western ethnic background (OR=1.66, 95%CI: 1.02-2.68) and parental age =< 29 years old (OR=1.71, 95%CI: 1.01-2.92). No associated factors were found among enabling factors. The need factors associated with a higher odds of parental help-seeking were having previous help-seeking (OR=2.52, 95%CI: 1.83-3.48) and discussing child's socio-emotional development in the well-child visit (OR=2.47, 95%CI: 1.73-3.53).

Conclusions Predisposing and need factors were associated with parental help-seeking for socio-emotional development of 3-years-old children. The findings can be used to further develop support for parents accessing adequate information, prevention, and anticipatory care with regard to the child's socio-emotional development.

Strengths and limitations of this study

- A longitudinal dataset was realized from a diverse community population.
- A broad assessment of potential factors associated with parental help-seeking behavior, including predisposing, enabling, and need factors following Andersen's Behavioral Model, was performed.
- Both formal and informal types of help-seeking sources were studied.
- Self-reported help-seeking behavior can be subject to social desirability bias and recall bias.
- Generalization is limited to the sample under study, the participation rate and loss to follow up were considerable.

Introduction

Psychosocial problems, such as attention deficit hyperactivity disorders (ADHD), conduct disorders, and anxiety disorders, are relatively common among young children.[1, 2] The literature suggests that 7%–25% of children worldwide experience psychosocial problems in early childhood (0-6 years).[3-8] Significantly, these psychosocial problems can track into adulthood.[9-11] Timely detection of (risk for) psychosocial problems and, consequently, offering appropriate interventions in early childhood can reduce problems and improve children's cognitive and academic performance.[1, 2, 5]

In order to identify psychosocial problems, validated instruments are often used for diagnosing emotional and behavioral problems in children under 18 years old.[12] At younger ages, certain behaviors (e.g. hitting, tantrums) can to some extent be part of the normal healthy development of psychosocial behavior of a child.[13] Therefore, for younger children instruments such as the Brief Infant–Toddler Social and Emotional Assessment (BITSEA) are used to detect 'at-risk' behavior. Studies show that children's 'at-risk' behavior can change to not at-risk and vice versa over time.[14, 15] Since young children's ability to express their psychosocial well-being is developing, parents and professionals have an important role in monitoring the child's socio-emotional development.[16-18] It is therefore important that parents take action for their concerns about their child's socio-emotional development to determine whether and what type of support is needed.

Help-seeking for such concerns might be guided by several factors, and, in this regard, Andersen and Newman provide a framework for health service use.[19] The framework postulates that the behavior of health service use depends on the three core groups of factors: (1) predisposing

factors (demographic and social characteristics); (2) enabling factors (the ability to access services) and (3) need factors (the internal and external need for health care services). Previous studies have found that predisposing factors, such as child's ethnic background and gender, are associated with parental help-seeking.[20, 21] Enabling factors, such as higher parental educational levels and higher incomes, have been shown to positively encourage parents to seek help for their child's problem behavior (4-14 years old).[22, 23] An important need factor that has been reported to increase help-seeking by parents is recognition of the child's problem (6-11 years old).[17, 24] Meanwhile, single-parent families, the high cost of professional mental health services, and the self-stigma of parents have been indicated as barriers to help-seeking for children's socio-emotional development (3-11 years old).[25-27] It is estimated that approximately one-third of parents seek help for the socio-emotional development of their children aged 4 to 11 who are at risk of psychosocial problems.[25, 28, 29] Moreover, thus far, research about parental help-seeking for the socio-emotional development has focused on school-aged children (4-12 years old) and adolescents (12-18 years old) rather than preschool children (0-4 years old).[21, 23, 24, 28, 29]

In the literature so far, parental help-seeking for socio-emotional problems of preschool children is rarely reported. Also, studies regarding parental help-seeking and children's socio-emotional problems have often been evaluating on a limited number of potential correlates.[30] The current study aimed to identify correlates of parental help-seeking regarding the socio-emotional development of 3-year-old children. Following the Andersen & Newman framework, we studied the association between parental help-seeking and the three core factors: predisposing, enabling, and need factors. In addition, we explored the formal and informal help sources used in help-seeking.

Methods

Study design and population

For the present study, data were collected by parental questionnaires when the child was 2 years old and again with a follow-up at 3 years old. In 2014 and 2015, parents living in the Rotterdam–Rijnmond area were invited by letter to participate in the study with their 2-year-old child. Parents were asked to complete and return the baseline questionnaire accompanied with a signed informed consent form when they visited the Dutch Preventive Youth Health Care (YHC) center for their regular well-child visit. In the Netherlands, regular well-child visits are one element of YHC which is offered free of charge to monitor and promote the health, well-being, and development of children aged 0-19 years.[31] One year later, parents enrolled in the study received

the follow-up questionnaire by e-mail or by mail with the request to return the completed questionnaire to the researchers in a pre-paid envelope.

From November 2014 to August 2015, 8937 parents attended for their 2-year child well-child visit, according to the YHC register. Of these, 2316 parents gave their consent to participate in the study (participation rate=25.9%) and 2305 parents completed the first questionnaires (response rate=99.5%). At the one-year follow-up, 1540 parents completed the second questionnaire. Children whose questionnaires were completed by other caregivers instead of their parents (n=33) were excluded. Thus, 1507 participants were included in the analyses of this study (see Figure 1).

Parental help-seeking

When the children were 3 years old, parental help-seeking was assessed by asking parents whether they had sought help in the past 12 months with regard to issues with their child's behavior or socio-emotional development. Parents could indicate yes/no whether they sought help at one or more of the following formal and informal help sources: 1) general practitioner (GP), 2) youth protection service, 3) mental health care professionals (e.g., psychiatrist and child psychiatry outpatient clinic), 4) parenting support service (e.g., parenting courses and pedagogue service), 5) social worker, 6) family, 7) friend/acquaintance/neighbor, 8) internet, 9) complementary medicine (e.g., homoeopathy), 10) emergency telephone service, 11) prayer house (e.g., church, mosque or synagogue). There was an open answer possibility for parents to report other sources, and answers were recoded into the existing response categories or recoded into the new generated options: 12) book/magazines, 13) daycare center/school and 14) specialized medical care (e.g., clinical, rehabilitation). Parents could choose multiple options. When the parent chose one of the above options, one point was scored. A total score was generated by summing up all confirmatory responses (range 0-14). Total scores were dichotomized into 'no' (none confirmatory options) indicating parents did not seek help from any sources and 'yes' (one or more confirmatory options) indicating parent sought help from one or more help sources for children's socio-emotional development in the past 12 months.

Formal and informal help sources

The above response categories (1-14) were categorized into formal help sources and informal help sources. Formal help sources were GP (1), youth protection service (2), mental health care professionals (3), parenting support service (4), social worker (5), and specialized medical care (14). The remaining options were categorized as informal help: family (6), friend/acquaintance/neighbor (7), internet (8), complementary medicine (9), emergency

telephone service (10), prayer house (11), book/magazine (12) and daycare center/school (13). Scores within each category were added up and two variables were generated: 'formal help source used' and 'informal help source used'. For both variables, the responses were dichotomized into 'no' (total score=0) and 'yes' (total scores≥1).

Potential correlates of parental help-seeking

Predisposing factors

Predisposing factors included child age, child gender, child ethnic background, and parental age measured at child-age 2 years. Child age (in months) at time of measurement was reported by parents. Child ethnic background (Dutch, other western, non-western) was defined based on country of birth of both parents according to the Classification of Statistics Netherlands.[32] When both parents were born in the Netherlands, the child was considered to have a Dutch background. When one parent was born outside the Netherlands, this country of birth determined child's ethnic background. When both parents were born outside the Netherlands, mother's country of birth determined the child's ethnic background.[32] Parental age (in years) was reported by parents at baseline and classified into three categories based on the distribution: '>=40 years', '30-39 years' and '=<29 years'.

Enabling factors

Enabling factors assessed at 24 months included parental educational level, parental work status, and family composition. Parental educational level was measured by one item asking about the highest level of education finalized by the respondent (mother or father) at 24 months. Educational level was categorized as high (higher vocational education, university), middle (higher secondary education, vocational education), or low (primary education, lower secondary education).[33] Respondents to the questionnaire were asked to report their work status. Parental work status reflects in 89.3% the mother's employment and 10.7% the father's work status. Parental work status was classified as 'employed (including full-time job and part-time job)' and 'unemployed'. The family composition was categorized into two-parent family or one-parent family.

Need factors

Need factors included the BITSEA Problem and Competence scale, stressful life events, child's general health, parental satisfaction of child's development, previous help-seeking and discussing child's socio-emotional development in the well-child visit.

The BITSEA consists of a 31-item Problem scale and an 11-item Competence scale which measures psychosocial well-being in children 12-36 months. Each item is scored 0 for 'not true', 1 for 'somewhat true', and 2 for 'certainly true'.[34] The items from the two scales of BITSEA are summed up independently. A score of 14 or higher on the Problem scale was categorized as 'at risk of psychosocial problems', and a score of 15 or lower on the competence scale was termed as 'at risk of competence delay'.[35, 36] In the previous study of Kruizinga among Dutch parents and children (n=3127), the BITSEA showed Cronbach's alphas of 0.76 and 0.63, and a test–retest reliability of 0.75 and 0.61.[37] In the present study, the Cronbach's alphas were 0.74 and 0.54.

Stressful life events were measured by assessing the occurrence of twelve stressful life events, such as a family relocation, divorce, or financial problems. If an event had happened, parents indicated when the specific life event happened: last year, 1-2 years ago, 3-4 years ago, or more than 4 years ago. When parents confirmed the occurrence of one event within the past two years (the first two options), one point was scored. If one event happened two years ago, then the event was not counted as a stressful life event for the child. A total score was calculated by summing up the points assigned. The stressful life events variable was generated with two categories based on the total score: total score 0 indicating 'no' and ≥1 'yes'.

The child's general health (good vs poor) and parental satisfaction of the child's development (yes vs no) were measured by two subscales of the Infant Toddler Quality of Life Questionnaire of 47 items (ITQOL-SF47).[38] According to the user manual, the raw scores of each variable were transformed and dichotomized. The scores above the cut-off point indicated a child's good general health and parent-satisfied development, respectively.[39] In previous research by Raat among general Dutch children (n=500), these two subscales showed Cronbach's alphas of 0.76 and 0.63, and a test–retest reliability of 0.75 and 0.6.[40] The Cronbach's alphas of the general health and parent-satisfied development in this study were 0.59 and 0.67.

Previous help-seeking was assessed at 24 months with the question: 'Have you sought help for your child due to his/her socio-emotional development from the following sources in the past two years?'. The answer options (1-14) were the same as the help-seeking question at 36 months. These options were re-categorized in the same way: 'no' (none confirmatory options) and 'yes' (one or more confirmatory options).

The discussion of the child's socio-emotional development in the well-child visit was measured by one question: 'During the regular well-child visit with YHC when the child was two years old,

were any specifics regarding your child's behavior, social, and emotional development discussed?' The options were 'no' and 'yes'.

Patient and public involvement statement

Neither patients nor the public was involved in the planning, design, conduct or reporting of this study.

Statistical analysis

Descriptive statistics were used to describe the characteristics of the study population. Hierarchical logistic regression models were fitted to investigate the correlates of help-seeking. Data were collected during the well-child visit when child was 2 years old, so the age of child was removed from the logistic regression analysis. All categorized variables were included as the independent variables by block. The Omnibus Test, a likelihood-ratio chi-square statistic, was used to assess the contribution of each block of variables to the model.[41] The first model (model 1) regarded predisposing variables as independent variables. The second model (model 2) additionally included enabling variables as independent variables. Finally, a third full model (model 3) with all variables from the three blocks was fitted. Descriptive statistics were used to describe formal and informal help-seeking of parents. Multicollinearity was examined using correlation analyses for categorical variables. Maximal coefficient r=0.254 indicated a weak correlation (0.2<r<0.4), therefore, all variables were included in the regression analyses.

Furthermore, we assessed interactions between the 13 potential correlates of help-seeking behavior and child gender, child ethnic background, parental age, and parental education level with regard to the association with help-seeking. After applying Bonferroni correction for multiple testing (p=0.05/42=0.001), no statistically significant interactions were found (Supplementary Table S1). A non-response analysis was conducted to assess differences between participants participating in follow-up and those lost to follow-up (Supplementary Table S2). The McNemar's test was applied to examine whether more parents used informal help sources among the parents who reported help-seeking (Supplementary Table S3). To provide more details, the characteristics of the study population by use of sources were provided in the Supplementary Table S4.

Regarding the missing data among the sample of 1507 children, multiple imputation by Fully Conditional Specification (FCS) was used to deal with the missing values on all independent variables in SPSS.[42] The pooled results of five imputed datasets were used. Finally, we performed a sensitivity analysis using complete-case data without missing values to check the robustness

of results (Supplementary Table S5). A p-value <0.05 was considered to be statistically significant. All analyses were completed using the IBM SPSS version 25 (IBM Corp., Armonk, NY, USA).

Results

Characteristics of the study population

Of all parents, 22.6% (n=341) reported help-seeking in the past 12 months for their 3-year-old child's psychosocial health; 6.8% (n=103) addressed formal help sources and 17.5% (n=264) addressed informal help sources. As for children, the mean age was 24.5 (SD=1.8) months (Table 1). Half of the children were boys (49.4%), 80.2% were Dutch, and 93.8% of the children lived in a two-parent family. Most parents were 30-39 years old (70.1%), employed (81.2%), and 59.6% had a high educational level.

Regarding comparison between parents with help-seeking experience and their counterparts, two predisposing factors child age (p>0.05) and child gender (p>0.05) were not significantly different.

Table 1. Characteristics of the study population (n=1507)

Items	Total (n=1507) Mean ± SD N(%)	Help-seeking No (n=1166) Mean ± SD N(%)	Help-seeking Yes (n=341) Mean ± SD N(%)	*p* value
Predisposing Factors				
Child age in months	24.5±1.8	24.5±1.8	24.5±1.9	0.802
Child gender				0.566
Boys	739 (49.4)	568 (49.0)	171 (50.7)	
Girls	758 (50.6)	592 (51.0)	166 (49.3)	
Child ethnic background				0.026*
Dutch	1161 (80.2)	917 (81.7)	244 (75.1)	
Other western	107 (7.4)	75 (6.7)	32 (9.8)	
Non-western	179 (12.4)	130 (11.6)	49 (15.1)	
Parental age in years				0.003**
>=40	166 (11.1)	140 (12.1)	26 (7.7)	
30-39	1048 (70.1)	818 (70.6)	230 (68.0)	
=<29	282 (18.9)	200 (17.3)	82 (24.3)	
Enabling Factors				
Parental educational level				0.003**
High	883 (59.9)	710(62.3)	173 (52.0)	
Middle	498 (33.8)	362 (31.8)	136 (40.8)	
Low	92 (6.2)	68 (6.0)	24 (7.2)	
Parental work status				< 0.001***
Employed	1195(81.8)	947 (83.9)	248 (74.7)	
Unemployed	266 (18.2)	182 (16.1)	84 (25.3)	
Family composition				0.004**
Two-parent family	1386 (93.8)	1084 (94.8)	302 (90.4)	

Single-parent family	92 (6.2)	60 (5.2)	32 (9.6)	
Need Factors				
BITSEA Problem scale score				< 0.001***
No risk	1400 (94.0)	1101 (95.6)	299 (88.5)	
At risk	90 (6.0)	51 (4.4)	39 (11.5)	
BITSEA Competence scale score				0.011*
No risk	1300 (88.0)	1017 (89.1)	283 (84.0)	
At risk	178 (12.0)	124 (10.9)	54(16.0)	
Stressful life events				< 0.001***
No	749 (51.0)	608 (53.5)	141 (42.3)	
Yes	720 (49.0)	528 (46.5)	192 (57.7)	
General health of the child [a]				0.007**
Good	1370 (92.2)	1070(93.2)	300 (88.8)	
Poor	116 (7.8)	78 (6.8)	38 (11.2)	
Parental satisfaction of child's development [b]				<0.001***
Yes	1380 (94.7)	1074(95.9)	306 (90.5)	
No	78 (5.3)	46(4.1)	32 (9.5)	
Previous help-seeking				<0.001***
No	1208 (82.2)	992 (87.1)	216 (65.5)	
Yes	261 (17.8)	147 (12.9)	114 (34.5)	
Discussion of child's socio-emotional development in the well-child visit				<0.001***
No	1196 (85.6)	980 (89.8)	216 (70.6)	
Yes	201 (14.4)	111 (10.2)	90 (29.4)	

Note: This table presents non-imputed data.

The missing numbers of variables are child gender (n=10), child ethnic background (n=60), parental age (n=11), parental educational level (n=34), parental work status (n=46), family composition (n=29), BITSEA Problem scale score (n=17), BITSEA Competence scale score (n=29), stressful life events (n=38), general health of the child (n=21), parental satisfaction of child's development (n=49), previous help-seeking (n=38), and discussion of child socio-emotional development in the well-child visit (n=110).

Data presented as mean ± SD or number (percentage). Significant differences between two subgroups of help-seeking and non-help-seeking parents were evaluated at 0.05 level using independent T tests for continuous variables and $\chi 2$ tests for categorical variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: SD=standard deviation; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

* p <0.05; ** p <0.01; *** p <0.001.

Correlates of parental help-seeking

Table 2 presents the results of logistic regression analyses. Model 1 with predisposing factors as independent factors showed that having an other-western ethnic background (OR=1.73, 95%CI: 1.10-2.71) and non-western ethnic background as a child (OR=1.51, 95%CI: 1.05-2.18) as well as parental age =< 29 years old (OR=2.28, 95%CI: 1.38-3.77) were associated with a higher odds of parental help-seeking.

Model 2 shows the association between predisposing factors and enabling factors. Of predisposing factors, having an other-western ethnic background (OR=1.66, 95%CI: 1.05-2.60) and parental age =<29 years old (OR=1.96, 95%CI: 1.17-3.27) were associated with parental help-seeking. Two enabling factors parental educational level (OR=1.36, 95%CI: 1.04-1.79) and parental employed status (OR=1.47, 95%CI: 1.07-2.02) were associated with a higher odds of parental help-seeking.

In the full model (model 3), two predisposing factors having an other-western ethnic background as a child (OR=1.66, 95%CI: 1.02-2.68) and parental age=<29 years old (OR=1.71, 95%CI: 1.01-2.92) were associated with a higher odds for parental help-seeking. No associations were found between enabling factors and parental help-seeking. Of the need factors, previous help-seeking (OR=2.52, 95%CI: 1.83-3.48) and discussion of child socio-emotional development in the well-child visit (OR=2.47, 95%CI: 1.73-3.53) were associated with a higher odds of parental help-seeking for socio-emotional development at child age 3 years. The block of need factors contributed most to the full model according to the $\chi 2$ by the Omnibus Test (all p-values<0.05).

Table 2. Associations between predisposing, enabling, and need factors and parental help-seeking in the past 12 months for the 3-year-old child (n=1507)

	Multivariate					
	Model 1		Model 2		Model 3	
	Predisposing variables		Plus enabling variables		Plus need variables	
Block Statistics	$\chi 2 = 22.38$		$\chi 2 = 16.79$		$\chi 2 = 107.09$	
	OR	95% CI	OR	95% CI	OR	95% CI
Predisposing Factors						
Child gender						
Boys	Ref		Ref		Ref	
Girls	0.93	0.73-1.19	0.93	0.73-1.19	0.98	0.75-1.27
Child ethnic background						
Dutch	Ref		Ref		Ref	
Other western	1.73*	1.10-2.71	1.66*	1.05-2.60	1.66*	1.02-2.68
Non-western	1.51*	1.05-2.18	1.20	0.81-1.78	1.18	0.77-1.79

Parental age in year						
>=40	Ref		Ref		Ref	
30-39	1.56	0.99-2.46	1.57	1.00-2.46	1.45	0.90-2.32
=<29	2.28**	1.38-3.77	1.96*	1.17-3.27	1.71*	1.01-2.92
Enabling Factors						
Parental educational level						
High			Ref		Ref	
Middle			1.36*	1.04-1.79	1.30	0.97-1.74
Low			1.12	0.67-1.89	1.10	0.63-1.90
Parental work status						
Employed			Ref		Ref	
Unemployed			1.47*	1.07-2.02	1.28	0.91-1.80
Family composition						
Two-parent family			Ref		Ref	
Single-parent family			1.51	0.95-2.41	1.31	0.80-2.15
Need Factors						
BITSEA Problem scale score						
No risk					Ref	
At risk					1.20	0.72-1.99
BITSEA Competence scale score						
No risk					Ref	
At risk					1.18	0.78-1.79
Stressful life events						
No					Ref	
Yes					1.29	0.98-1.68
General health of the child [a]						
Good					Ref	
Poor					1.16	0.73-1.85
Parental satisfaction of child's development [a]						
Yes					Ref	
No					1.35	0.75-2.45
Previous help-seeking						
No					Ref	
Yes					2.52***	1.83-3.48
Discussion of child socio-emotional development in the well-child visit						
No					Ref	
Yes					2.47***	1.73-3.53

Abbreviation: OR=Odds Ratio; CI=Confidence Interval; BITSEA= Brief Infant–Toddler Social and Emotional Assessment. χ2 = Model chi-square for each block of variables, all significant at p <0 .05.

Model 1: The model with predisposing factors as independent variables.

Model 2: The model with predisposing and enabling factors as independent variables.

Model 3: The full model with predisposing, enabling, and need factors as independent variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

* p <0.05; ** p <0.01; *** p <0.001

Use of formal and informal help sources

Table 3 shows the frequency of formal and informal help sources used in parental help-seeking for their 3-year-old child's socio-emotional development in the past 12 months. Among the 341 parents who reported help-seeking, fewer parents (n=163) reported the use of formal help sources than parents (n=264) who reported the use of informal help sources (p<0.001, Supplementary Table S3); only 26 (7.6%) parents used both formal and informal help sources. The GP (12.0%) and parenting support services, such as parenting courses (9.4%), were the most frequently used formal help sources. Family (55.4%) and friends/acquaintance/neighbor (40.5%) were the most frequently used informal help sources. Characteristics of the study population by use of sources in parental help-seeking are presented in Supplementary Table S4.

Table 3. Use of formal and informal help sources in parental help-seeking in the past 12 months for the 3-year-old child (n=1507)

	n	Total sample (%)	Help-seeking (Yes) (%)
		(n=1507)	(n=341)
Parents reported use of help sources (yes)	341	22.6	100.0
Formal and informal help sources	26	1.7	7.6
Formal help source(s) only	77	5.1	22.6
Informal help source(s) only	238	15.8	69.8
Type of help sources			
Formal Sources (yes)	103	6.8	30.2
General practitioner	41	2.7	12.0
Parenting support service	32	2.1	9.4
Specialized medical care	20	1.3	5.9
Youth protection services	18	1.2	5.3
Mental health care professionals	11	0.7	3.2
Social worker	1	0.1	0.3
Informal Sources (yes)	264	17.5	77.4
Family	189	12.5	55.4
Friend/acquaintance/neighbor	138	9.2	40.5
Internet	71	4.7	20.8
Daycare center/school	12	0.8	3.5
Complementary medicine	4	0.3	1.2
Emergency telephone service	3	0.2	0.9
Book/magazine	2	0.1	0.6
Prayer house	1	0.1	0.3

Note. Parents could endorse more than one option; hence, the sum of each subcategory does not total up to 100%.

Additional data analyses

Compared to participants lost in the follow-up (n=775), participants in the follow-up (n=1540) were, as a child, more likely to be at a younger age and have a Dutch ethnic background and, as a parent, to be at an older age and have a higher educational level (all $p<0.001$). No significant differences were found between boys and girls ($p>0.05$) (Supplementary Table S2).

Supplementary Table S5 shows the results of multivariate logistic regression conducted with non-imputed complete data. There was a difference between the full models of multivariate logistic regression conducted with non-imputed data and those with imputed data. In the imputed data analysis, parents of a child with other-western ethnic background (OR=1.66, 95%CI: 1.02-2.68) in the predisposing block were more likely to have help-seeking. This association was not significant (OR=1.51, 95%CI: 0.87-2.63) in the analysis conducted with complete data. On the other hand, stressful life events (OR=1.45, 95%CI: 1.07-1.96) in the need block were associated with help-seeking in the complete data analysis but not in the imputed data analysis (OR=1.29, 95%CI: 0.98-1.68). Although the significance of the two factors changed, the pattern of relevant factors was similar. The rest of the factors in three blocks kept the same association and significance in the imputed data analysis and the complete data analysis, thereby indicating the robustness of the model. Furthermore, we conducted the Chi-square test of homogeneity, which showed that there were no significant differences (all p-values >0.05) between the characteristics of the imputed data and the complete data (Supplementary Table S6).

Discussion

In the present study, correlates of parental help-seeking for the socio-emotional development of 3-year-old children were studied. Among predisposing factors, having an other-western ethnic background as a child and parental age younger than 29 years old indicated a higher odds of parental help-seeking for the socio-emotional development of children aged 3 years. Also, previous help-seeking and discussing the child's socio-emotional development in the well-child visit as need factors were associated with a higher odds for parental help-seeking. No correlate of parental help-seeking was found among enabling factors.

In the present study predisposing, enabling, and need factors were evaluated in relation to help-seeking behavior. The Andersen & Newman's framework composes of environment, population characteristics, health behavior, and outcome related to help-seeking behavior.[43] In the current study the information on the environment (including the health care system and external environment), and the information on the outcome (including perceived health status, evaluated health status, and consumer satisfaction) was not collected. We recommend future studies to get a complete overview of factors associated with help-seeking behavior. The findings of predisposing factors indicated parents of child with other-western background were more like to seek help, compared with parents of Dutch children. Existing studies on the association between minority ethnic background and help-seeking for children's socio-emotional development have shown conflicting results.[44-47] These differing results may be due to the different characteristics of minor ethnic backgrounds as well as differing help-seeking measures among the studies.[47, 48] Although parents of children from minority ethnic background perceived more barriers to access formal help-seeking, studies report these parents are able to access informal help sources as easily and as equally to native parents [26, 49-51] Moreover, the health care framework in the Netherlands (e.g. equal primary care, collaboration of professionals in the community, universal health care), and social contexture (e.g. language and cultural similarity) may partly reduce barriers to health care among the parents with other-western background.[52-54] Besides the child's other-western background, as a predisposing factor, parental age was also associated with help-seeking: younger parents were more likely to seek help for their 3-year-old child. Previous studies have reported first-time parents to be more open and actively involved in searching for information about parenting and child development.[55] First-time parents are also more likely to reach out for help.[56] In the current study, we were unable to adapt for the parity of the child; therefore, we were not able to evaluate whether this explanation might hold for our findings.

With regard to enabling factors without correction for the need factors, parental educational level and employment status were associated with help-seeking. After correction for the need factors, parental educational level, employment status and family composition were not significantly associated. Studies

on association between three enabling factors and help-seeking have reported contrary results. In the Netherlands, equal access to primary care (e g. GPs and YHC), to comprehensive care professionals in clinics and communities, and to universal health care may reduce the barriers for parents in the enabling domain.[52, 53] Similar results have been found in other studies conducted in a similar context.[51, 57, 58]

The need factors in the Andersen & Newman's framework consist of perceived need and evaluated need.[43] Parent-reported general health of the child and parental satisfaction with child's development reflect most closely the perceived need, while the BITSEA-score and discussion with YHC professionals most closely reflect the evaluated need (i.e., being more clinical assessments). With regard to need factors, we observed that parents seeking any help for their child's socio-emotional development before the age of 2 years were more likely to seek help in the past 12 months at child age 3 years. It is plausible that parents who had previous help-seeking may be able to deal better with barriers (e.g. parents' self-stigma) and with exploring more sources in terms of help-seeking.[47] In addition, the literature regarding the use of mental health service for children and adolescents suggests that social and emotional problems exist over a longer period of time.[21, 59] Therefore, it is suggested that for actual problem behavior longitudinal care is needed.[11, 29, 60] Furthermore, parents who had previously discussed their child's socio-emotional development in the well-child visit at the child age of 2 years, were more likely to seek help in the past 12 months. In the Netherlands, the discussion during the well-child visit could be raised by parents or YHC professionals. The YHC professionals can suggest a discussion based on the evaluation of the child's socio-emotional development. Parents also can consult on this issue if they are concerned about their child's socio-emotional development. In this capacity, the YHC professional assists the parent to recognize early childhood psychosocial problems. Although recognition of problem behavior by parents has been reported to be difficult for parents, it is important for them to be able to seek help in time.[5, 17, 20, 28, 44] The YHC thus plays a crucial role in screening and identifying children's social and emotional problems in the Netherlands.[61]

In total, 6.0% of 1507 children were at risk of socio-emotional problems measured by BITSEA Problem scale, and 12% were at risk of delay of socio-emotional competence measured by BITSEA Competence scale. The rates of socio-emotional development problems in this study were comparable with these measured by other instruments, such as 17% at moderate risk and 11% at high risk of developmental delays measured by the Parent Evaluation of Developmental Status among children (0-5 years old) in the American National Survey of Children's Health.[62, 63] Consistent with previous studies in school-aged children, our results showed that formal help sources were used less frequently than informal help sources for children's socio-emotional development.[24, 25] Gaining access to formal help sources may have more barriers, such as iterative referral processes, long waiting times, and high costs.[26, 49, 64] The informal

help sources most often used in this study were the parental social network as well as information from books and the internet.[50, 65] Accordingly, compared with formal help sources, informal help sources might be more directly available and accessible for parents when they are seeking help for their children's socio-emotional development.[64, 66]

Timely parental help-seeking for the socio-emotional development of children is associated with a lower rate and lower severity of psychosocial problems in later life.[1, 2, 5] This study provides insight into parental help-seeking when their children are very young. The findings indicated that parents of preschool children for example most frequently used help sources close by, such as family, whilst books and magazines were less frequently utilized. In addition, investments might be made towards improving parents' access to formal health care use for their children (e.g., provide the access to online consultation given by psychological professionals). Previous research has suggested, especially among non-native parents, limited and difficult access to health care facilities.[20, 67] Longitudinal and experimental studies are recommended to examine the differential pathways between parent-perceived versus diagnosed child psychosocial problems and the use of health care. A range of factors should be studied as contemplated by the Andersen model; taking into account access parents have to health care, but also barriers they perceive to make use of health care. Qualitative and quantitative methods should be combined. Regarding the BITSEA and subscales of the ITQOL-SF47 in this study, some coefficients of reliability were lower than the suggested guideline of 0.70, especially the interrater reliability correlations (0.3 and 0.17) of BITSEA. However, these reported low correlations were the correlations between parents and daycare teachers, which are typically lower than the correlations between parents.[68] We recommend future studies to evaluate the reliability and repeated assessments especially in diverse samples to check the robustness of our findings.

The present study has several strengths. First, the longitudinal correlates between predisposing, enabling, and need factors and parental help-seeking were studied among a large community sample of parents of 3-year-old children. Parental help-seeking for children under 4 years old is rarely studied.[24, 25, 48] Second, formal and informal help sources in parental help-seeking were included. Specifically, a broad range of informal help sources, e.g., internet, books, complementary medicine and religious institutes were assessed. Nevertheless, there were some limitations that need to be addressed. First, help-seeking for perceived social and emotional problems was parent-reported. Parents may have under- or overestimated their child's socio-emotional development. The assessment focussed on parents' perceived socio-emotional problems contrary to a clinical diagnosis. In our analyses, we did correct for risk of psychosocial problems at age 2-years, assessed by the BITSEA. A combination of clinical diagnose instruments, such as the Child Behavior Checklist (CBCL), with parent perceived problems may

contribute to a better understanding of parental help-seeking behavior.[69] Second, information on the help-seeking is self-reported and recall bias is possible; however, the one-year recall might have decreased recall inaccuracy.[70] Third, the multivariate regression analyses showed a slight difference between results conducted with the complete data and those with the imputed data. Therefore, we assessed the homogeneity of the above two datasets (Supplementary Table S6) and found no significant difference in the characteristics of the two populations ($p>0.05$). Fourth, a limitation is the participation rate and the loss to follow-up in the present study. The participation rate was 25.9% which is lower than reported participation rates in large birth cohorts (around 30-40%).[71] We were not able to receive information from parents themselves as to why they refused to participate. Common reasons for non-participation are a lack of interest or a lack of time.[72,73] In addition, we cannot ascertain that all parents received the invitation to participate nor that they actually visited YHC at the child aged 2 years. Furthermore, the parents with a younger child, a Dutch ethnic background, an older age, and a higher education level were more likely to participate in the follow-up of the study. Consequently, the findings are applicable to the population under study. Regardless, efforts should be made to involve hard-to-reach populations in research studies. Finally, a lack of repeated measurements did not allow us to establish the causal association in the current study.

Conclusion

The predisposing, enabling, and needs factors correlated with help-seeking by parents of preschool children with regard to their child's socio-emotional development were evaluated. The factors non-western ethnic background, younger age of the parent, previous help-seeking and specific discussions about the child's socio-emotional development during the well-child visit were associated with the presence of parental help-seeking. Parents reported using informal help sources more often than formal help sources. The findings can be used to further develop support for parents to access adequate information, prevention, and anticipatory care with regard to their child's socio-emotional development.

Footnotes

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Ethics approval: The Medical Ethical Committee of the Erasmus Medical Center Rotterdam declared that the Medical Research Involving Human Subject Act (Dutch abbreviation WMO) did not apply to the present study and, subsequently, permission was given to carry out the study and to publish the results in scientific journals (number MEC-2014-152). This study was conducted by following the guidelines proposed in the World Medical Association Declaration of Helsinki.

Contributors: HR obtained the funding. HR, AG, and RB managed the research and undertook data collection. CBF, JL, AG, and HR conceived the research described in this paper. JL analyzed the data. All authors provided input in interpreting the data. JL drafted the manuscript with input of AG , CBF, HR and GB. All authors critically reviewed and approved the manuscript.

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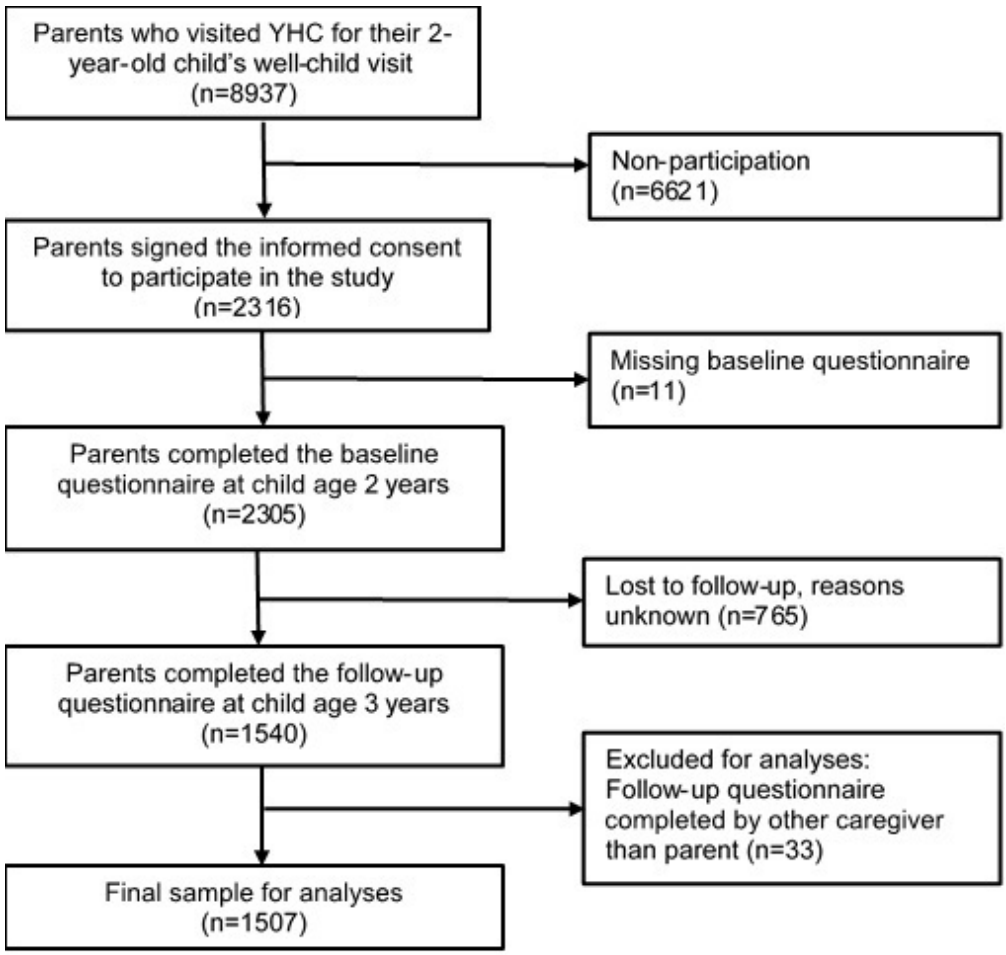

Figure 1. Population of Analysis

42x46mm (300 x 300 DPI)

Supplementary Materials [Tables]

Title: Correlates of help-seeking by parents for the socio-emotional development of their 3-year-old children: a longitudinal study.

Journal: BMJ Open

Authors: Jie Luo, Hein Raat, Carmen B. Franse, Rienke Bannink, Guannan Bai, Amy van Grieken

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Supplementary Table S1. *P*-values for interactions between the 13 factors and child gender, child ethnic background, parental age and parental education level on help-seeking (n=1507)

	Child gender	Child ethnic background	Parental age	Parental education level
	p value	*p* value	*p* value	*p* value
Child gender	-	0.877	0.537	0.751
Child ethnic background	0.877	-	0.049	0.981
Parental age	0.537	0.049	-	0.829
Parental education level	0.751	0.981	0.829	-
Parental work status	0.325	0.909	0.841	0.069
Family composition	0.226	0.078	0.887	0.194
BITSEA Problem scale score	0.419	0.373	0.074	0.969
BITSEA Competence scale score	0.414	0.853	0.406	0.100
Stressful life events	0.003	0.518	0.786	0.033
General health of the child	0.893	0.171	0.442	0.271
Parental satisfaction of child's development	0.446	0.307	0.350	0.347
Previous help-seeking behavior	0.274	0.619	0.159	0.567
Discussion of child social-emotional development in the well-child visit	0.552	0.193	0.126	0.731

Note: numbers in table are p-values of interaction of the variables in rows and columns.

Abbreviations: BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

Multivariate logistic regression was adopted for interaction analyses in the full model with predisposing variables, enabling variables and need variables as independent variables. After applying Boneferroni correction for multiple testing (P=0.05/42=0.001), no statistically significant interaction was found.

Supplementary Table S2. Non-response analyses (n = 2305)

	Total (n=2305) Mean ± SD N(%)	Response to follow-up		*p* value
		No (n=765) Mean ± SD N(%)	Yes (n=1540) Mean ± SD N(%)	
Child age in months	24.6±1.8	24.8±1.6	24.5±1.8	<0.001
Child gender				0.155
Boy	1159 (50.6)	401 (52.7)	758 (49.5)	
Girl	1132 (49.4)	360 (47.3)	772 (50.5)	
Child ethnic background				<0.001
Dutch	1576 (73.3)	415 (58.9)	1161 (80.2)	
Other western	166 (7.7)	59 (8.4)	107 (7.4)	
Non-western	409 (19.0)	230 (32.7)	179 (12.4)	
Parental age in year				<0.001
>=40	262 (22.6)	89 (11.8)	173 (11.3)	
30-39	1500 (65.9)	438 (58.2)	1062 (69.6)	
=<29	515 (11.5)	225 (29.9)	290 (19.0)	
Parental education level				<0.001
High	1175 (52.8)	282 (39.1)	893 (59.5)	
Middle	858 (38.6)	345 (47.8)	513 (34.2)	
Low	191 (8.6)	95 (13.2)	96 (6.4)	

Note: This table present non-imputed data. The missing numbers of variables are child age (n=32), child gender (n=16), child ethnic background (n=165), parental age (n=39), parental educational level (n=92).

Abbreviation: SD=standard deviation.

P values are based on Independent t-test and chi-square test for non-response to follow-up and response groups.

Supplementary Table S3. McNemar's test for homogeneity of formal sources use and informal sources use (n=341)

	Informal sources use		*p* value
	Yes (n=264)	No (n=77)	
Formal sources use			
Yes (n=103)	26	77	<0.001
No (n=238)	238	0	

P value is based on the McNemar's test.

Supplementary Table S4. Characteristics of the study population by use of formal and informal sources in parental help-seeking (n=1507)

	Total	Use of formal sources			Use of Informal sources		
		No	Yes		No	Yes	
	(n=1507) Mean ± SD N(%)	(n=1404) Mean ± SD N(%)	(n=103) Mean ± SD N(%)	*p* value	(n=1243) Mean ± SD N(%)	(n=264) Mean ± SD N(%)	*p* value
Predisposing Factors							
Child age in month	24.5±1.8	24.5±1.9	24.5±1.6	0.920	24.5±1.8	24.5±2.0	0.593
Child gender				0.029			0.648
Boys	739 (49.4)	678 (48.6)	61 (59.8)		614 (49.6)	125 (48.1)	
Girls	758 (50.6)	717 (51.4)	41 (40.2)		623 (50.4)	135 (51.9)	
Child ethnic background				0.020			0.508
Dutch	1161 (80.2)	1093 (81.0)	68 (69.4)		966 (80.8)	195 (77.7)	
Other western	107 (7.4)	96 (7.1)	11 (11.2)		85 (7.1)	22 (8.8)	
Non-western	179 (12.4)	160 (11.9)	19 (19.4)		145 (12.1)	34 (13.5)	
Parental age in year				0.285			0.001
>=40	166 (11.1)	155 (11.1)	11 (10.9)		149 (12.1)	17 (6.5)	
30-39	1048 (70.1)	983 (70.5)	65 (64.4)		870 (70.6)	178 (67.7)	
=<29	282 (18.9)	257 (18.4)	25 (24.8)		214 (17.4)	68 (25.9)	
Enabling Factors							
Parental education level				0.001			0.170
High	883 (59.9)	841 (61.1)	42 (43.3)		740 (61.1)	143 (54.8)	
Middle	498 (33.8)	449 (32.6)	49 (50.5)		399 (32.9)	99 (37.9)	
Low	92 (6.2)	86 (6.3)	6 (6.2)		73 (6.0)	19 (7.3)	
Parental work status				0.006			0.015
Employed	1213(81.2)	1125 (82.5)	70 (71.4)		996 (82.9)	199 (76.5)	
Unemployed	280 (18.8)	238 (17.5)	28 (28.6)		205 (17.1)	61 (23.5)	
Family composition				0.210			0.054
Two-parent family	1386 (93.8)	1297 (94.0)	89 (90.8)		1149 (94.3)	237 (91.2)	
Single-parent family	92 (6.2)	83 (6.0)	9 (9.2)		69 (5.7)	23 (8.8)	
Need Factors							
BITSEA Problem scale score				<0.001			0.021
No risk	1400 (94.0)	1319 (95.0)	81 (80.2)		1161 (94.6)	239 (90.9)	
At risk	92 (6.0)	70 (5.0)	20 (19.8)		66 (5.4)	24 (9.1)	
BITSEA Competence scale score				0.001			0.352
No risk	1300 (88.0)	1222 (88.7)	78 (77.2)		1074 (88.3)	226 (86.3)	
At risk	178 (12.0)	155(11.3)	23(22.8)		142 (11.7)	36 (13.7)	

Stressful life events				0.048		0.001
No	749 (51.0)	708 (51.7)	41 (41.4)		641 (53.0)	108 (41.7)
Yes	720 (49.0)	662 (48.3)	58 (58.6)		569 (47.0)	151 (58.3)
General health of the child [a]				0.007		0.153
Good	1370 (92.2)	1283(92.7)	87 (85.3)		1135 (92.7)	235 (90.0)
Poor	116 (7.8)	101 (7.3)	15 (14.7)		90 (7.3)	26 (10.0)
Parental satisfaction of child's development [b]				<0.001		0.366
Yes	1380 (94.7)	1297(95.6)	83 (81.4)		1135 (94.9)	245 (93.5)
No	78 (5.3)	59(4.4)	19 (18.6)		61 (5.1)	17 (6.5)
Previous help-seeking				<0.001		<0.001
No	1208 (82.2)	1151 (83.9)	57 (58.8)		1039 (85.8)	169 (65.5)
Yes	261 (17.8)	221 (16.1)	40 (41.2)		172 (14.2)	89 (34.5)
Discussion of child socio-emotional development in the well-child visit				<0.001		<0.001
No	1196 (85.6)	1148 (88.0)	48 (52.2)		1017 (87.6)	179 (75.8)
Yes	201 (14.4)	157 (12.0)	44 (47.8)		144 (12.4)	57 (24.2)

Note: This table presents non-imputed data. The missing numbers of variables are parental age (n=11), child gender (n=10), child ethnic background (n=60), parental educational level (n=34), parental work status (n=46), family composition (n=29), BITSEA Problem scale score (n=17), BITSEA Competence scale score (n=29), stressful life events (n=38), general health of the child (n=21), parental satisfaction of child's development (n=49), previous help-seeking (n=38), and discussion of child socio-emotional development in the well-child visit (n=110).

Data presented as mean ± SD or number (percentage). Significant differences between two subgroups of help-seeking and non-help-seeking parents were evaluated at 0.05 level using independent T tests for continuous variables and $\chi 2$ tests for categorical variables.

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: SD=standard deviation; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

The bold print indicates p <0.05.

Supplementary Table S5. Multivariate logistic regression model on independent factors and help-seeking with complete data (n=1168)

	Model 1		Model 2		Model 3	
	Predisposing variables		Plus enabling variables		Plus need variables	
Block Statistics	χ2 = 22.08		χ2 = 14.11		χ2 = 93.56	
	OR	95% CI	OR	95% CI	OR	95% CI
Predisposing Factors						
Child gender						
Boy	Ref		Ref		Ref	
Girl	0.86	0.65-1.14	0.86	0.65-1.14	0.93	0.69-1.25
Child ethnic background						
Dutch	Ref		Ref		Ref	
Other western	1.51	0.90-2.54	1.45	0.86-2.44	1.51	0.87-2.63
Non-western	1.52	1.00-2.33	1.21	0.77-1.90	1.18	0.72-1.91
Parental age in year						
>=40	Ref		Ref		Ref	
30-39	1.67	0.97-2.88	1.72	0.99-2.96	1.51	0.86-2.65
=<29	2.87***	1.59-5.18	2.53**	1.39-4.59	2.23*	1.20-4.15
Enabling Factors						
Parental education level						
High			Ref		Ref	
Middle			1.27	0.93-1.73	1.24	0.89-1.71
Low			1.00	0.52-1.94	0.93	0.46-1.87
Parental work status						
Employed			Ref		Ref	
Unemployed			1.59*	1.11-2.27	1.32	0.90-1.95
Family composition						
Two-parent family			Ref		Ref	
Single-parent family			1.66	0.91-3.03	1.46	0.77-2.75
Need Factors						
BITSEA Problem scale score						
No risk					Ref	
At risk					0.96	0.51-1.81
BITSEA Competence scale score						
No risk					Ref	
At risk					1.35	0.85-2.14

Stressful life events		
No	Ref	
Yes	1.45*	1.07-1.96
General health of the child [a]		
Good	Ref	
Poor	1.25	0.73-2.14
Parental satisfaction of child's development [b]		
Yes	Ref	
No	1.58	0.81-3.09
Previous help-seeking		
No	Ref	
Yes	2.71***	1.90-3.88
Discussion of child social and emotional development in the well-child visit		
No	Ref	
Yes	2.67***	1.82-3.92

Model 1: The model with predisposing factors as independent variables.
Model 2: The model with predisposing and enabling factors as independent variables.
Model 3: The full model with predisposing, enabling, and need factors as independent variables.
a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).
b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).
Abbreviation: OR=Odds Ratio; CI=Confidence Interval; BITSEA= Brief Infant–Toddler Social and Emotional Assessment.
* p <0.05; ** p <0.01; *** p <0.001.

Supplementary Table S6. Chi-square test for homogeneity of complete data and imputed data

	Complete data (n=1168) N(%)	Imputed data (n=1507) N(%)	*p* value
Predisposing Factors			
Child gender			
Boy	569 (48.7)	744 (49.4)	0.737
Girl	599 (51.3)	763 (50.6)	
Child ethnic background			
Dutch	959 (82.1)	1202(79.8)	0.260
Other western	83 (7.1)	113 (7.5)	
Non-western	126 (10.8)	192 (12.7)	
Parental age in year			
>=40	123 (10.5)	167 (11.1)	0.899
30-39	825 (70.6)	1056 (70.1)	
=<29	220 (18.8)	284 (18.8)	
Enabling Factors			
Parental education level			
High	717 (61.4)	901 (59.8)	0.394
Middle	391 (33.5)	511 (33.9)	
Low	60 (5.1)	95 (6.3)	
Parental work status			
Employed	958 (82.0)	1227 (81.4)	0.690
Unemployed	210 (18.0)	280 (18.6)	
Family composition			
Two-parent family	1111 (95.1)	1407 (93.4)	0.055
Single-parent family	57 (4.9)	100 (6.6)	
Need Factors			
BITSEA Problem scale score			
No risk	1103 (94.4)	1411 (93.6)	0.385
At risk	65 (5.6)	96 (6.4)	
BITSEA Competence scale score			
No risk	1045 (89.5)	1318 (87.5)	0.108
At risk	123 (10.5)	189 (12.5)	
Stressful life events			
No	606 (51.9)	769 (51.0)	0.661
Yes	562(48.1)	738 (49.0)	
General health of the child [a]			
Good	1081 (92.6)	1390 (92.2)	0.761

Poor	87 (7.4)	117 (7.8)	
Parental satisfaction of child's development [b]			
Yes	1112 (95.2)	1428 (94.6)	0.453
No	56 (4.8)	82 (5.4)	
Previous help-seeking			
No	971 (83.1)	1236 (82.0)	0.451
Yes	197 (16.9)	271 (18.0)	
Discussion of child social and emotional development in the well-child visit			
No	1010 (86.5)	1287 (85.4)	0.430
Yes	158 (13.5)	220 (14.6)	

a. General health of the child was measured by the 4-item subscale General Health of the Infant Toddler Quality of Life Questionnaire (47 items).

b. Parental satisfaction of child's development was measured by the 5-item subscale Satisfaction of Child's Development of the Infant Toddler Quality of Life Questionnaire (47 items).

Abbreviation: BITSEA= Brief Infant–Toddler Social and Emotional Assessment.

P values are based on the independent chi-square test for complete data and imputed data groups.

STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3,4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4,5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	5
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	-
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5,6,7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5,6,7
Bias	9	Describe any efforts to address potential sources of bias	8
Study size	10	Explain how the study size was arrived at	n/a
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	n/a
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	8
		(*d*) If applicable, explain how loss to follow-up was addressed	8
		(*e*) Describe any sensitivity analyses	8
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	Figur2
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	10
		(b) Indicate number of participants with missing data for each variable of interest	10
		(c) Summarise follow-up time (eg, average and total amount)	5
Outcome data	15*	Report numbers of outcome events or summary measures over time	10

Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (*b*) Report category boundaries when continuous variables were categorized (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	12,13 5,6,7 n/a
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	16
Discussion			
Key results	18	Summarise key results with reference to study objectives	17
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	19,20
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	19
Generalisability	21	Discuss the generalisability (external validity) of the study results	20
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	21

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.