Factors associated with media use for parenting information: A cross-sectional study among parents of children aged 0–8 years

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Abstract

Aim: Media use may strengthen parents’ capacities to deal with parenting issues. This study examined which factors are associated with media use for parenting information.

Design: Cross-sectional data of 658 parents of children aged 0–8 years, gathered in the CIKEO cohort study in the Netherlands, were analysed.

Methods: Multivariable logistic regression models were used to examine which factors were associated with media use for parenting information.

Results: The mean age of the participants was 33.8 years (SD = 5.0); 94.7% were mothers; 77.4% used media for parenting information. Parents with more questions or concerns (OR: 1.40, 95% CI: 1.23, 1.59), and parents who received parenting information from their social contacts (OR: 5.57, 95% CI: 3.22, 9.61), had higher odds of media use for parenting information. Older parents (OR: 0.95, 95% CI: 0.91, 1.00), and parents of older children (OR: 0.84, 95% CI: 0.74, 0.95), had lower odds of media use for parenting information.

Keywords
information seeking, Internet, media, nursing, parenting support
INTRODUCTION

The majority of parents have questions or concerns about their child’s health, behaviour, development or their own parenting skills (Reijneveld et al., 2008). These questions or concerns are often interpreted as problems that require the help of a professional (Kesselring et al., 2012), which may be related to the rising demand for specialized youth and family care, including youth mental health care and intensive parenting support (Daly & Bray, 2015; Hilderink et al., 2020; Olfsen et al., 2015; Wiens et al., 2020). Recently, there has been increased attention for policies that strengthen parents’ capacities to deal with parenting issues within their social networks and communities (Daly, 2015; Knijn & Hopman, 2015). This may reduce the burden on specialized youth and family care (Daly, 2015; Knijn & Hopman, 2015).

Information and awareness raising through media is a potentially cost-efficient strategy to provide large groups of parents with evidence-based parenting information (Metzler et al., 2012). In previous studies, media use with regard to parenting issues has been associated with improved parenting skills, a higher parenting sense of competence, and decreased feelings of depression, anxiety and stress (Calam et al., 2008; Hudson et al., 2003; Kaplan et al., 2014; Na & Chia, 2008; Nieuwoer et al., 2013a, 2013b). Obtaining evidence-based parenting information may motivate parents to improve their parenting skills and support them to nurture their child’s health and well-being (Calam et al., 2008; Nieuwoer et al., 2013a). However, the quality of parenting information available by media varies (Pehora et al., 2015). According to Khoo et al. (2008), the majority of parents would appreciate more guidance on the quality of parenting information provided by media, preferably from a doctor or a nurse (Khoo et al., 2008).

BACKGROUND

Many parents use parenting information provided by books, magazines, television, radio and the Internet (Radey & Randolph, 2009). In particular, the use of digital information rapidly increased in the past decades (Lupton et al., 2016; Nieuwoer et al., 2013b). The majority of parents use parenting websites and discussion forums (Baker et al., 2017; Radey & Randolph, 2009; Rothbaum et al., 2008), and nearly half of the parents seek or exchange parenting information through social media, such as Twitter, Facebook, YouTube, Pinterest and Instagram (Baker et al., 2017; Lupton et al., 2016). Lambert and Loiselle (2007) suggest that a parent’s decision to seek information is influenced by need, personal and contextual factors. Need factors relate to a perceived gap between what a parent knows and wants to know (Boot & Meijman, 2010; Lambert & Loiselle, 2007). Personal factors relate to socio-demographic characteristics and psychosocial characteristics, such as personality traits, skills and attitudes with regard to information seeking (Lambert & Loiselle, 2007; Longo, 2005). Contextual factors relate to the broader information environment and context, such as the accessibility of information, and information provided by family and friends (Lambert & Loiselle, 2007; Longo, 2005).

Few previous studies have examined which need and contextual factors are associated with parents’ media use for parenting information. Various studies have examined personal factors (Baker et al., 2017; Malone et al., 2014; Radey & Randolph, 2009; Rothbaum et al., 2008; Sarkadi & Bremberg, 2005; Stern et al., 2012; Walker, 2005). Some studies indicate that several groups of parents, including parents with a low socioeconomic position, may less often use media for parenting information, but the findings are inconsistent (Baker et al., 2017; Malone et al., 2014; Radey & Randolph, 2009; Rothbaum et al., 2008; Sarkadi & Bremberg, 2005; Stern et al., 2012; Walker, 2005).

Gaining more insight into factors associated with media use for parenting information is considered to be a crucial step towards developing strategies that foster the use of evidence-based parenting information (Metzler et al., 2012; Pehora et al., 2015). This study answers the question: “Which need, personal, and contextual factors are associated with media use for parenting information among parents of children aged 0–8 years?”. We distinguish between various sources of online and offline media, using data from a large community-based sample of parents (Windhorst et al., 2019).

THE STUDY

3.1 | Design

Data for the current study were obtained from an observational cohort study that was embedded in the Consortium Integration Knowledge promotion Effectiveness of parenting interventions (CIKEO; Windhorst et al., 2019). The CIKEO cohort study was designed as a naturalistic effect evaluation, to investigate associations between the use of (elements of) various types of parenting support and outcomes about parenting and child development (Windhorst et al., 2019). The target population were parents/caregivers of children aged 0–8 years who were living in the Netherlands. Participants were enrolled between October 2017 and December 2019, in two parts. Two preventive Youth Health Care providers in the area of Rotterdam and Dordrecht sent invitation letters to 6,506 parents/caregivers of a child aged 15 months to 6 years in their registry (Part A). Parents/caregivers with multiple children in this age range could participate with one of their children; the name of this child was mentioned in the invitation letter. In addition, parents/caregivers of children aged 0–8 years who were planning to participate in parenting intervention programmes were recruited via providers of parenting intervention programmes across the Netherlands and directly via advertisements on websites, discussion forums and Facebook pages related to parenting (Part B). For the purpose of the current study, we used data of Part A.

All invited families received an informed consent form, a baseline questionnaire and an information letter with the request whether the parent/caregiver who spends most time with the child would...
complete the questionnaire. Parents/caregivers could participate voluntarily by returning the informed consent form and the questionnaire to the researchers in a pre-paid envelope or via the Internet. All parents/caregivers who provided written informed consent and a completed questionnaire were enrolled in the study. After 12 months, participants received a follow-up questionnaire by post or via the Internet, depending on their preference.

In total, 979 parents in Part A participated in the baseline measurement (Figure 1); 225 parents were lost to follow-up; data from 29 questionnaires were excluded because the follow-up questionnaire was not filled out by the same parent; data from 26 questionnaires completed by two parents together were excluded from the analyses; 12 parents participated in the study with multiple children, and data from their second questionnaires were excluded from the analyses. In addition, data from 29 questionnaires were excluded due to missing information on the outcome of interest. Hence, the population for analyses consisted of 658 participants.

4 | METHOD

4.1 | Media use for parenting information

The use of parenting information was assessed in the follow-up questionnaire, by a series of questions that asked whether the parent used parenting information provided by (1) websites, (2) discussion forums, (3) social media (e.g. Twitter, Facebook, Instagram and YouTube), (4) WhatsApp chat groups, (5) (digital) magazines, (6) books and (7) personal social contacts (family, friends, acquaintances, neighbours or colleagues). The answer options were “often,” “sometimes” and “never” and were recoded into a dichotomous variable indicating whether this source of parenting information was used. “Often” and “sometimes” were recoded into “yes,” and “never” was recoded into “no.” Media were defined as channels or systems of communication or information (Merriam-Webster, n.d.). Information provided by personal social contacts did not fit the definition of media, as it refers to a direct exchange of information. Three variables (yes/no) were created to indicate overall media use (1–6), online media use (1–4) and offline media use (6).

4.2 | Need, contextual and personal factors

The number of questions or concerns about topics related to parenting was studied as a need factor (Boot & Meijman, 2010). Parental questions or concerns were assessed in the follow-up questionnaire by a list of 21 frequent parenting issues (Table 1; Oudhof et al., 2013). Parents were asked to indicate the issues on which they have had questions or concerns in the 12 months prior to the follow-up measurement. Other issues could be specified in an open text box. The 21 topics were divided into the following themes: “parenting,” “child development,” “sleeping,” “food,” “child behaviour and emotions” and “media use of the child” (Table 1).

Personal factors were assessed in the baseline questionnaire. Personal factors concerning the responding parent/caregiver were age (in years), gender (male/female), educational level, employment status and migration background. Educational level was assessed by the highest completed education and was reclassified into three categories based on the 2011 International Standard Classification of Education (ISCED). ISCED level 0–2 (no education, primary education, lower secondary education) was categorized as “low”; ISCED level 3–5 (upper secondary education, postsecondary non-tertiary education, short-cycle tertiary education) was categorized as “middle”; ISCED level 6–8 (bachelor, master, doctoral or equivalent) was categorized as “high” (Statistics, 2012). Parents were asked to specify their employment status as: “working fulltime,” “working part-time,” “stay-at-home parent,” “unemployed,” “incapacitated,” “studying” and “other.” Working fulltime and part-time were categorized as “paid job”; the remaining categories were categorized as “no paid job.” Migration background was assessed by country of birth. When either the responding parent or one or both of his/her parents were born outside the Netherlands, this was categorized as a migration background (CBS, 2016). The following personal factors with regard to the child and family were studied: age of the child (in years), gender of the child (boy/girl), number of children in the household (one/two/more than two) and family composition (one-parent family/two-parent family).

Parenting information provided by personal social contacts (yes/no), as described earlier (question 7 on the use of parenting information), was studied as a contextual factor.
4.3 Analysis

Descriptive statistics were used to characterize the participants, to
describe the frequency of media use and to describe the topics on
which parents had questions or concerns. Full multivariable logistic
regression models were used to assess independent associations
between need, personal and contextual factors, and the use of (1)
overall media, (2) online media, (3) offline media, (4) websites, (5)
discussion forums, (6) social media, (7) WhatsApp chat groups and
(8) (digital) magazines for parenting information. Odds ratios (OR)
and 95% confidence intervals (95% CI) were calculated for each
factor.

To assess moderating effects, interaction terms were separately
added to the full regression models on media use for parenting in-
formation. A Bonferroni correction for multiple testing was applied
\( p = \frac{0.05}{30} = 0.002 \). No statistically significant interactions were
found. \( p \)-values of the interaction analyses are presented in Table S1.

Multiple imputation was used to handle missing values of the
need, personal and contextual factors. Missing values varied be-
tween 0.2% \((n = 1)\) for gender of the child and 0.6% \((n = 4)\) for age of
the child (Table 2). Five imputed data sets were created for pooled
estimates. The regression analyses were performed in both the
non-imputed and the imputed data set, and the results were simi-
lar (data not shown). Data were analysed in Statistical Package for
Social Sciences, version 25 for Windows (IBM SPSS Statistics for
Windows, IBM Corp). \( p \)-values below .05 were considered statisti-
cally significant.

4.4 Non-response analysis

The socio-demographic characteristics of participants who were ex-
cluded from the sample for analyses due to missing data or lost to
follow-up \((n = 321)\) were compared with the characteristics of par-
ticipants in the sample for analyses \((n = 658)\) using \( t \) tests and chi-
squared tests. Compared to participants in the sample for analyses,
excluded participants were more often fathers \((p < .001)\), more often
had a lower educational level \((p = .006)\), and more often had a migra-
tion background \((p = .048)\). No other differences were found \((p > .05)\).

4.5 Ethics

The Medical Ethics Committee of the Erasmus Medical Center,
Rotterdam, decided that the rules laid down in the Dutch Medical
Research Involving Human Subjects Act (in Dutch: “Wet Medisch-
wetenschappelijk Onderzoek met mensen”) did not apply to the
research proposal (proposal number MEC-2017-432). The CIKEO
cohort study was registered as NL7342 in the Netherlands Trial
Registry (Windhorst et al., 2019).
RESULTS

5.1 Questions or concerns about topics related to parenting

Table 1 presents the topics on which parents had questions or concerns. Frequent questions or concerns related to parenting were about setting rules and limits (22.9%) and punishing or rewarding (18.4%). Frequent questions or concerns about the child were about becoming potty-trained (20.4%) and listening or obeying (17.9%).

5.2 Characteristics of the participants

Table 2 presents the characteristics of the participants. The mean age of the responding parents was 33.8 (SD = 5.0) years. In total,
94.7% of the responding parents were women. The majority of the responding parents had a high educational level (56.4%), a paid job (82.4%) and no migration background (88.6%). The mean age of the child was 3.2 (SD = 1.9) years.

About three quarters of the responding parents (77.4%) used media for parenting information; 27.5% of the parents used both online and offline media; 41.2% of the parents only used online media; 4.7% of the parents only used offline media. Table 3 presents the frequency of specific types of media use for parenting information. Parenting websites were used most frequently.

### 5.3 Media use for parenting information

Table 4 presents the fully adjusted regression models on the associations between need, personal, and contextual factors and media use for parenting information. The fully adjusted regression model for overall media use showed that parents with more questions or concerns related to parenting issues (OR: 1.40, 95% CI: 1.23, 1.59), and parents who received parenting information from their personal social contacts (OR: 5.57, 95% CI: 3.22, 9.61), had higher odds of media use for parenting information. Older parents (OR: 0.95, 95% CI: 0.91, 1.00), and parents of older children (OR: 0.84, 95% CI: 0.74, 0.95), had lower odds of media use for parenting information.

The fully adjusted regression model for online media use (Table 4) shows that parents with more questions or concerns related to parenting issues (OR: 1.38, 95% CI: 1.24, 1.54), and parents who received parenting information from their personal social contacts (OR: 5.09, 95% CI: 2.90–8.92), had higher odds of online media use for parenting information. Older parents (OR: 0.93, 95% CI: 0.89, 0.98), parents of older children (OR: 0.87, 95% CI: 0.78, 0.97) and parents of boys (OR: 0.62, 95% CI: 0.42, 0.91) had lower odds of online media use for parenting information.

The fully adjusted regression model for offline media use (Table 4) shows that parents with more questions or concerns related to parenting issues (OR: 1.18, 95% CI: 1.09, 1.27), parents of more than two children (OR: 1.85, 95% CI: 1.10, 3.12) and parents who received parenting information from their personal social contacts (OR: 2.01, 95% CI: 1.07, 3.79) had higher odds of offline media use for parenting information. Compared to parents with a high educational level, parents with a middle educational level (OR: 0.63, 95% CI: 0.44, 0.92) had lower odds of offline media use for parenting information.

Table 5 presents the fully adjusted regression models for the use of "websites," "discussion forums," "social media," "WhatsApp chat groups" and "(digital) magazines." Having more questions or concerns related to parenting issues was associated with higher odds of all types of media use (p < .05), except (digital) magazines (OR: 1.07, 95% CI: 0.99, 1.15). All personal factors, except migration background, were associated with one or more specific types of media use (p < .05). Receiving parenting information from personal social contacts was associated with higher odds of all types of media use (p < .05), except WhatsApp chat groups (OR: 2.04, 95% CI: 0.70, 5.98).

### 6 DISCUSSION

This study examined which need, personal and contextual factors are associated with media use for parenting information by parents of children aged 0–8 years. Parents with more questions or concerns related to parenting issues (need factor), younger parents, and parents of younger children (personal factors), and parents who received parenting information from personal social contacts (contextual factor) had higher odds of overall media use for parenting information. All other personal factors, except migration background, were associated with one or more specific types of media use.

#### 6.1 Need factors

Having more questions or concerns related to parenting issues was independently associated with higher odds of overall, online and offline media use for parenting information. This is in line with previous studies in which parental concerns have been associated with formal help-seeking (Ellingson et al., 2004; Farmer et al., 1999). Having questions or concerns may evoke information seeking in order to gain factual information and to reduce feelings of uncertainty (Boot & Meijman, 2010). At the same time, obtaining parenting information may also raise new questions or concerns (Rathbone & Prescott, 2019). Longitudinal research is needed to gain more insight into the directions of this association.

### TABLE 3 Frequency of media use for parenting information among participants of the CIKEO study (n = 658)

|                          | “Often” used for parenting information | “Sometimes” used for parenting information | “Never” used for parenting information |
|--------------------------|----------------------------------------|-------------------------------------------|----------------------------------------|
|                          | n (% of total)                         | n (% of total)                            | n (% of total)                         |
| Parenting websites       | 41 (6.2%)                              | 366 (55.6%)                               | 251 (38.1%)                            |
| Discussion forums        | 13 (2.0%)                              | 177 (26.9%)                               | 468 (71.1%)                            |
| Social media             | 18 (2.7%)                              | 151 (22.9%)                               | 489 (74.3%)                            |
| WhatsApp chat groups     | 16 (2.4%)                              | 63 (9.6%)                                 | 579 (88.0%)                            |
| (Digital) magazines      | 44 (6.7%)                              | 290 (44.1%)                               | 324 (49.2%)                            |
| Books                    | 23 (3.5%)                              | 189 (28.7%)                               | 446 (67.8%)                            |
Many parents had questions or concerns about setting rules and limits, and punishing and rewarding. Frequent themes about the child were becoming potty-trained and listening and obeying. In additional analyses, we explored whether the specific themes on which parents had questions or concerns were associated with overall, online and offline media use. The results

| TABLE 4 | Associations between need, personal, and contextual factors and media use for parenting information among participants of the CIKEO study (n = 658) |
|-----------------|-----------------|-----------------|-----------------|
|                  | Overall media use (*yes* n = 509; 77.4%) | Online media use (*yes* n = 452; 68.7%) | Offline media use (*yes* n = 212; 32.2%) |
|                  | OR (95% CI)     | OR (95% CI)     | OR (95% CI)     |
| Need factors     |                 |                 |                 |
| Questions or concerns related to parenting issues (more) | 1.40 (1.23, 1.59)*** | 1.38 (1.24, 1.54)*** | 1.18 (1.09, 1.27)*** |
| Personal factors |                 |                 |                 |
| Age of the parent (in years) | 0.95 (0.91, 1.00)* | 0.93 (0.89, 0.98)** | 1.01 (0.97, 1.05) |
| Gender of the parent |                 |                 |                 |
| Female | ref. | ref. | ref. |
| Male | 1.32 (0.52, 3.38) | 1.36 (0.56, 3.30) | 1.16 (0.53, 2.58) |
| Educational level of the parent |                 |                 |                 |
| High | ref. | ref. | ref. |
| Middle | 1.14 (0.72, 1.81) | 1.09 (0.72, 1.64) | 0.63 (0.44, 0.92)* |
| Low | 0.73 (0.32, 1.63) | 0.73 (0.33, 1.58) | 0.51 (0.21, 1.23) |
| Employment status of the parent |                 |                 |                 |
| Paid job | ref. | ref. | ref. |
| No paid job | 0.83 (0.48, 1.45) | 0.73 (0.44, 1.20) | 1.09 (0.69, 1.73) |
| Migration background of the parent |                 |                 |                 |
| No | ref. | ref. | ref. |
| Yes | 1.20 (0.63, 2.31) | 1.43 (0.78, 2.63) | 1.07 (0.62, 1.85) |
| Family situation |                 |                 |                 |
| Two-parent family | ref. | ref. | ref. |
| One-parent family | 0.64 (0.26, 1.60) | 0.78 (0.32, 1.86) | 0.85 (0.34, 2.12) |
| Age of the child (in years) | 0.84 (0.74, 0.95)** | 0.87 (0.78, 0.97)* | 0.97 (0.88, 1.08) |
| Gender of the child |                 |                 |                 |
| Girl | ref. | ref. | ref. |
| Boy | 0.68 (0.44, 1.03) | 0.62 (0.42, 0.91)* | 0.72 (0.51, 1.02) |
| Number of children in the household |                 |                 |                 |
| One child | ref. | ref. | ref. |
| Two children | 0.78 (0.45, 1.35) | 0.94 (0.58, 1.54) | 1.27 (0.82, 1.98) |
| More than two children | 1.15 (0.61, 2.18) | 1.08 (0.61, 1.90) | 1.85 (1.10, 3.12)* |
| Contextual factors |                 |                 |                 |
| Parenting information from personal social contacts |                 |                 |                 |
| No | ref. | ref. | ref. |
| Yes | 5.57 (3.22, 9.61)** | 5.09 (2.90–8.92)*** | 2.01 (1.07, 3.79)* |

Note: Odds ratios and 95% confidence intervals were derived from the logistic regression analyses for overall, online and offline media use for parenting information. p-values <.05 in bold.
Abbreviations: CI = confidence interval; OR = odds ratio; ref. = reference group.
*p-value <.05, ** p-value <.01 and *** p-value <.001.
*Educational level “High”: bachelor, master, doctoral or equivalent; “Middle”: upper secondary education, postsecondary non-tertiary education, short-cycle tertiary education; “Low”: no education, primary education, lower secondary education.
| TABLE 5  Associations between need, personal, and contextual factors and the use of specific types of media for parenting information among participants of the CIKEO study (n = 658) |
|---|---|---|---|---|---|
| | Websites (*"yes" n = 407; 61.9%) | Discussion forums (*"yes" n = 190; 28.9%) | Social media (*"yes" n = 169; 25.7%) | WhatsApp (*"yes" n = 79; 12.0%) | (Digital) magazines (*"yes" n = 334; 50.8%) |
| Full model | Full model | Full model | Full model | Full model | Full model |
| OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| **Need factors** | **Need factors** | **Need factors** | **Need factors** | **Need factors** | **Need factors** |
| Questions or concerns related to parenting issues (more) | 1.29 (1.18, 1.42)** | 1.17 (1.08, 1.26)** | 1.23 (1.14, 1.33)** | 1.17 (1.12, 1.23)** | 1.07 (0.99, 1.15) |
| **Personal factors** | **Personal factors** | **Personal factors** | **Personal factors** | **Personal factors** | **Personal factors** |
| Age of the parent (in years) | 0.93 (0.89, 0.97)** | 0.93 (0.89, 0.98)** | 0.96 (0.92, 1.01) | 0.97 (0.91, 1.03) | 0.96 (0.93, 1.00)* |
| Gender of the parent | | | | | |
| Female | ref. | ref. | ref. | ref. | ref. |
| Male | 1.52 (0.65, 3.56) | 1.09 (0.44, 2.70) | 0.12 (0.02, 0.92)* | 1.46 (0.46, 4.69) | 0.47 (0.21, 1.09) |
| **Educational level of the parent** | **Educational level of the parent** | **Educational level of the parent** | **Educational level of the parent** | **Educational level of the parent** | **Educational level of the parent** |
| High | ref. | ref. | ref. | ref. | ref. |
| Middle | 0.78 (0.53, 1.14) | 0.83 (0.56, 1.23) | 1.54 (1.03, 2.28)* | 1.59 (0.95, 2.68) | 1.05 (0.73, 1.50) |
| Low | 0.72 (0.33, 1.54) | 1.08 (0.46, 2.51) | 1.07 (0.42, 2.70) | 0.67 (0.15, 3.03) | 0.55 (0.25, 1.22) |
| Employment status of the parent | Employment status of the parent | Employment status of the parent | Employment status of the parent | Employment status of the parent | Employment status of the parent |
| Paid job | ref. | ref. | ref. | ref. | ref. |
| No paid job | 0.56 (0.35, 0.89)* | 1.16 (0.70, 1.93) | 1.12 (0.67, 1.86) | 0.95 (0.48, 1.90) | 0.62 (0.39, 0.97)* |
| Migration background of the parent | Migration background of the parent | Migration background of the parent | Migration background of the parent | Migration background of the parent | Migration background of the parent |
| No | ref. | ref. | ref. | ref. | ref. |
| Yes | 1.67 (0.93, 3.00) | 1.00 (0.55, 1.83) | 0.99 (0.54, 1.83) | 1.45 (0.69, 3.06) | 1.58 (0.92, 2.72) |
| Family situation | Family situation | Family situation | Family situation | Family situation | Family situation |
| Two-parent family | ref. | ref. | ref. | ref. | ref. |
| One-parent family | 0.90 (0.39, 2.08) | 0.64 (0.24, 1.73) | 1.82 (0.78, 4.28) | 0.87 (0.48, 1.57) | 0.28 (0.11, 0.71)** |
| Age of the child (in years) | 0.88 (0.79, 0.98)* | 0.90 (0.80, 1.01) | 1.07 (0.95, 1.20) | 1.06 (0.91, 1.24) | 0.88 (0.80, 0.98)* |
| Gender of the child | Gender of the child | Gender of the child | Gender of the child | Gender of the child | Gender of the child |
| Girl | ref. | ref. | ref. | ref. | ref. |
| Boy | 0.71 (0.49, 1.01) | 0.68 (0.47, 0.98)* | 0.78 (0.53, 1.15) | 0.57 (0.35, 0.94)* | 0.96 (0.68, 1.33) |
| Number of children in the household | Number of children in the household | Number of children in the household | Number of children in the household | Number of children in the household | Number of children in the household |
| One child | ref. | ref. | ref. | ref. | ref. |
| Two children | 0.97 (0.61, 1.53) | 0.67 (0.43, 1.03) | 0.98 (0.61, 1.55) | 1.07 (0.60, 1.90) | 0.62 (0.41, 0.95)* |
| More than two children | 1.06 (0.62, 1.80) | 0.56 (0.32, 0.97)* | 0.85 (0.47, 1.52) | 0.45 (0.20, 1.05) | 0.64 (0.39, 1.06) |
of the full multivariable logistic regression models are presented in Table S2. The specific themes on which parents had questions or concerns were not associated with overall media use, which indicates that parents are using media for a broad variety of parenting issues.

6.2 | Personal factors

The age of the parent and the age of the child were independently associated with overall and online media use for parenting information, with lower odds of media use when age increases, which is in line with previous findings (Baker et al., 2017; Radey & Randolph, 2009; Sarkadi & Bremberg, 2005). This study showed that these associations remain significant after adjusting for parental questions or concerns. We hypothesize that younger parents may have been using the Internet from a younger age, which perhaps made them more familiar with the use of online media for support (Baker et al., 2017). We suggest that media use for parenting information may be particularly important for parents of younger children, as it offers experience-based peer support and assistance for specific issues related to child development in the first years (Bernhardt & Felter, 2004; Plantin & Daneback, 2009).

The gender of the parent was not independently associated with overall, online and offline media use for parenting information. Previous studies found that fathers less often used media with regard to parenting issues (Baker et al., 2017; Radey & Randolph, 2009; Sarkadi & Bremberg, 2005; Stern et al., 2012). The number of fathers in our sample was low, which may have resulted in a lack of statistical power to evaluate gender differences. It has been suggested that, in general, fathers are less likely to be the primary caregiver of the child and might thereby less often seek parenting information (Baker et al., 2017; Metzler et al., 2012; Radey & Randolph, 2009). In addition, Sarkadi and Bremberg (2005) have suggested that online media, including discussion platforms, may be tailored towards mothers (Sarkadi & Bremberg, 2005). Future studies on media use for parenting issues should pay specific attention to the inclusion of a large and diverse group of fathers.

The educational level of the parent was not independently associated with overall and online media use for parenting information. However, parents with a lower educational level had lower odds of using offline media for parenting information, compared to parents with a high educational level. The results of previous studies were inconsistent (Baker et al., 2017; Guillory et al., 2014; Radey & Randolph, 2009; Rothbaum et al., 2008; Sarkadi & Bremberg, 2005). There may be educational disparities due to differences in health literacy: the cognitive and social skills that influence a parent’s motivation and ability to access, understand and use parenting information (Nutbeam, 2009; Rothbaum et al., 2008; Van Dijk, 2006). Parents with different socioeconomic positions and or educational levels may differ in their media preference and their evaluation of the trustworthiness of these sources (Malone et al., 2014; Rothbaum et al., 2008). The results of this study indicate there may be less
educational disparities for online media than for offline media. On the one hand, this is promising as online media may provide means to reach a larger and more diverse group of parents with parenting information. On the other hand, this may raise concerns, because the quality of the parenting information provided by social media and discussion forums may be lower, and the information may sometimes be inaccurate (Chung et al., 2012).

Additional analyses were conducted to explore the association between educational level and information triangulation: the use of both online and offline media (Table S3). Parents with a low and a middle educational level had significantly lower odds of using a combination of online and offline sources, compared to parents with a high educational level. This may be disadvantageous, as obtaining information from multiple sources may foster a more critical evaluation of the accuracy of the gathered information (O'Connor & Madge, 2004). We also explored whether household income was independently associated with media use, and this was not the case (p-values of the association in full multivariable logistic regression models for overall media use, online media use and offline media use >.05 (data not shown)).

Having a migration background was not independently associated with media use for parenting information. This is in line with previous findings (Radey & Randolph, 2009). We hypothesize that media are an important source of parenting information to parents with a migration background, as their access to formal care may be decreased due to language and/or cultural differences (Hernández-plaza et al., 2004). Media may offer parenting information in their first language (Hernández-plaza et al., 2004; Mao, 2015).

### 6.3 Contextual factors

Parents receiving parenting information from personal social contacts had higher odds of media use for parenting information, independent of their need for parenting information. This is in line with results of previous studies which showed that social contacts influence information seeking by referring to information sources, by supporting the retrieval of information and by discussing and evaluating information (Boot & Meijman, 2010; Brashers et al., 2002; Walker & Riley, 2001). We hypothesize that receiving parenting information from personal social contacts may increase parents’ motivation to seek and exchange parenting information (Boot & Meijman, 2010). We recommend the use of qualitative and/or mixed methods designs to gain more insight into the specific pathways of this association. Future studies should also examine other contextual factors, such as the availability of parenting information in different languages and countries (Brashers et al., 2002).

### 6.4 The intensity of media use

In additional analyses, the intensity of media use for parenting information was taken into account. The intensity of media use was calculated as the sum of the use of websites, discussion forums, social media, WhatsApp, (digital) magazines and books (“never” = 0 / “sometimes” = 1/ “often” = 2; range = 0–12). A linear regression model was used to assess independent associations between need, contextual, and personal factors and overall media use. The associations in the full multivariable linear regression model were similar to the associations in the full multivariable logistic regression model for overall media use (data not shown).

### 6.5 Implications for policy and practice

This study indicates that a large and diverse group of parents is using media for parenting information. Parents differ in their media preferences, and the quality of information may vary between these media (Chung et al., 2012; Pehora et al., 2015). Health and social care professionals may encourage the use of evidence-based parenting information in various ways. First, by spreading evidence-based parenting information through media that fit the preferences of parents (Radey & Randolph, 2009). Second, by providing guidance on the retrieval of evidence-based parenting information by media, for example by an “information prescription” with a list of reliable websites (Khoo et al., 2008). Finally, by developing and implementing intervention strategies that enhance media literacy (Doak et al., 1996; Jeong et al., 2012; Pehora et al., 2015) and by training parents to evaluate the trustworthiness of information (Chung et al., 2012). We advise to pay special attention to groups of parents who may be less likely to use media for parenting information, including parents who receive no parenting information from their personal social contacts.

### 7 Limitations

Strengths of this study include the availability of data on specific types of media, and the large variety of potentially associated factors. Several limitations should also be considered. First, the representativeness of the sample was reduced due to excluded participants and participants that were lost to follow-up. Fathers, parents with a lower educational level and parents with a migration background were more likely to be excluded from the sample for analyses. The statistical power to detect associations may have been reduced due to this underrepresentation, but we have no rationale to expect that the direction of the associations has been affected. Second, the cross-sectional design did not allow to infer causality. Future studies may expand upon the findings using longitudinal designs with large and varied samples of mothers and fathers.

### 8 Conclusion

Need, personal and contextual factors are associated with media use for parenting information among parents of children aged 0–8 years. Parents with more questions or concerns about topics related to
parenting (need factor) and parents who receive parenting information by personal social contacts (contextual factor) had higher odds of media use for parenting information. Older parents and parents of older children (personal factors) had lower odds of media use for parenting information. Although a large and diverse group of parents is using media for parenting information, parents differ in their media preferences, and the quality of information may vary. Special attention should be paid to groups of parents who are less likely to use media for parenting information, including parents who receive no parenting information from their personal social contacts. Health and social care professionals may encourage the use of evidence-based parenting information by (1) communicating through media that fit the preferences of parents, (2) by providing guidance on media use and (3) by implementing intervention strategies that improve media literacy. Ultimately, more parents will feel empowered to use media to obtain evidence-based parenting information, which strengthens their capacity to deal with parenting issues.

ACKNOWLEDGEMENT
Not applicable.

CONFLICT OF INTEREST
No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS
IF: data collection, conceptualization, analysis, interpretation of the data and writing the original draft; DW: supervision, data collection, interpretation of the data and critical review; YM: data collection and critical review; MC, CH and WJ: study design and critical review; HR: supervision, study design, data collection, interpretation of the data and critical review. All authors approved the final version.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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REFERENCES
Baker, S., Sanders, M. R., & Morawska, A. (2017). Who uses online parenting support? A cross-sectional survey exploring Australian parents’ internet use for parenting. Journal of Child and Family Studies, 26(3), 916–927. https://doi.org/10.1007/s10826-016-0608-1
Bernhardt, J. M., & Felter, E. M. (2004). Online pediatric information seeking among mothers of young children: Results from a qualitative study using focus groups. Journal of Medical Internet Research, 6(1), e7. https://doi.org/10.2196/jmir.6.1.e7
Boot, C. R. L., & Meijman, F. J. (2010). The public and the Internet: Multifaceted drives for seeking health information. Health Informatics Journal, 16(2), 145–156. https://doi.org/10.1177/146058210364786
Brasher, D. E., Goldsmith, D. J., & Hsieh, E. (2002). Information seeking and avoiding in health contexts. Human Communication Research, 28(2), 258–271. https://doi.org/10.1111/j.1468-2958.2002.tb00807.x
Calam, R., Sanders, M. R., Miller, C., Sadhna, V., & Cartomt, S.-A. (2008). Can technology and the media help reduce dysfunctional parenting and increase engagement with preventative parenting interventions? Child Maltreatment, 13(4), 347–361. https://doi.org/10.1177/1077559508321272
CBS. (2016). Afbakening generaties met migratieachtergrond. Retrieved from https://www.cbs.nl/nl-nl/achtergrond/2016/47/afbakening-generaties-met-migratieachtergrond
Chung, M., Oden, R. P., Joyner, B. L., Sims, A., & Moon, R. Y. (2012). Safe infant sleep recommendations on the Internet: Let’s Get’s milk it. The Journal of Pediatrics, 161(6), 1080–1084.e1. https://doi.org/10.1016/j.jpeds.2012.06.004
Daly, M. (2015). Parenting support as policy field: An analytic framework. Social Policy and Society, 14(4), 597. https://doi.org/10.1017/S1474746415000226
Daly, M., & Bray, R. (2015). Parenting support in England: The bedding down of a new policy. Social Policy and Society, 14(4), 633. https://doi.org/10.1017/S1474746415000214
Doak, C. C., Doak, L. G., & Root, J. H. (1996). Teaching patients with low literacy skills (Vol. 2). Lippincott-Raven.
Ellingson, K. D., Briggs-Gowan, M. J., Carter, A. S., & Horwitz, S. M. (2004). Parent identification of early emerging child behavior problems: Predictors of sharing parental concern with health providers. Archives of Pediatrics & Adolescent Medicine, 158(8), 766–772. https://doi.org/10.1001/archpedi.158.8.766
Farmer, E. M. Z., Stangl, D. K., Burns, B. J., Costello, E. J., & Angold, A. (1999). Use, persistence, and intensity: Patterns of care for children’s mental health across one year. Community Mental Health Journal, 35(1), 31–46.
Guillory, J., Niederdeppe, J., Kim, H., Pollak, J. P., Graham, M., Olson, C., & Gay, G. (2014). Does social support predict pregnant mothers’ information seeking behaviors on an educational website? Maternal and Child Health Journal, 18(9), 2218–2225. https://doi.org/10.1007/s10995-014-1471-6
Hernández-plaza, S., Pozo, C., & Alonso-Morillo, E. (2004). The role of informal social support in needs assessment: Proposal and application of a model to assess immigrants’ needs in the south of Spain. Journal of Community & Applied Social Psychology, 14(4), 284–298. https://doi.org/10.1002/casp.782
Hilderink, A., Niessen, I., de Nooijer, A., van Schoubroeck, C., Schoonenberg, D. L., van Helmond, C., Lustermans, G., Groen, L., Hemmelder, V., & Jansen, R. (2020). Stelsel in Groei: Een onderzoek naar financiële tekorten in de jeugdzorg.
Hudson, D. B., Campbell-Grossman, C., Ofe Fleck, M., Elek, S. M., & Shipman, A. M. Y. (2003). Effects of the new fathers network on first-time fathers’ parenting self-efficacy and parenting satisfaction during the transition to parenthood. Issues in Comprehensive Pediatric Nursing, 26(4), 217–229. https://doi.org/10.1080/01460860390246687
Jeong, S.-H., Cho, H., & Hwang, Y. (2012). Media literacy interventions: A meta-analytic review. Journal of Communication, 62(3), 454–472. https://doi.org/10.1111/j.1460-2466.2012.01643.x
Kaplan, K., Solomon, P., Salzer, M. S., & Brusilovsky, E. (2014). Assessing an Internet-based parenting intervention for mothers with a serious mental illness: A randomized controlled trial. Psychiatric Rehabilitation Journal, 37(3), 222. https://doi.org/10.1037/prj0000080
Kesselring, M., de Winter, M., Horjus, B., van de Schoot, R., & van Yperen, T. (2012). Do parents think it takes a village? Parents’ attitudes towards nonparental adults’ involvement in the upbringing and
nurture of children. *Journal of Community Psychology*, 40(8), 921–937. https://doi.org/10.1002/jcop.21497

Khoo, K., Bolt, P., Babl, F. E., Jury, S., & Goldman, R. D. (2008). Health information seeking by parents in the Internet age. *Journal of Paediatrics and Child Health*, 44(7–8), 419–423. https://doi.org/10.1111/j.1440-177x.2008.01322.x

Knijn, T., & Hopman, M. (2015). Parenting support in the Dutch ‘participatie-sociaal, Social Policy and Society*, 14(4), 645–656. https://doi.org/10.1017/S14774744150000329

Lambert, S. D., & Loiselle, C. G. (2007). Health information—seeking behavior. *Qualitative Health Research*, 17(8), 1006–1019. https://doi.org/10.1177/1049732307305199

Longo, D. R. (2005). Understanding health information, communication, and information seeking of patients and consumers: A comprehensive and integrated model. *Health Expectations*, 8(3), 189–194. https://doi.org/10.1111/j.1369-7625.2005.00339.x

Lupton, D., Pedersen, S., & Thomas, G. M. (2016). Parenting and digital media: From the early web to contemporary digital society. *Sociology Compass*, 10(8), 730–743. https://doi.org/10.1111/soc4.12398

Malone, M., While, A., & Roberts, J. (2014). Parental health information seeking and re-exploration of the ‘digital divide’. *Primary Health Care Research & Development*, 15(2), 202–212. https://doi.org/10.1017/S1463424213000194

Mao, Y. (2015). Investigating Chinese Migrants’ Information-Seeking Patterns in Canada: Media Selection and Language Preference. *Global Media Journal*, 8(2), 113.

Merriam-Webster. (n.d.). Definition of media. Retrieved 03-08-2021 from https://www.merriam-webster.com/dictionary/medium

Metzler, C. W., Sanders, M. R., Rusby, J. C., & Crowley, R. N. (2012). Using media: From the early web to contemporary digital society. *Sociology Compass*, 10(8), 730–743. https://doi.org/10.1111/soc4.12398

Na, J.-C., & Chia, S. W. (2008). Impact of online resources on informal learners: Parents’ perception of their parenting skills. *Computers & Education*, 51(1), 173–186. https://doi.org/10.1016/j.compedu.2007.05.006

Nieuwboer, C. C., Fukkink, R. G., & Hermans, J. M. A. (2013a). Online programs as tools to improve parenting: A meta-analytic review. *Children and Youth Services Review*, 35(11), 1823–1829. https://doi.org/10.1016/j.childyouth.2013.08.008

Nieuwboer, C. C., Fukkink, R. G., & Hermans, J. M. A. (2013b). Peer and professional parenting support on the Internet: A systematic review. *Cyberpsychology, Behavior, and Social Networking*, 16(7), 518–528. https://doi.org/10.1089/cyber.2012.0547

Nutbeam, D. (2009). Defining and measuring health literacy: what can we learn from literacy studies? *International Journal of Public Health*, 54(5), 303–305.

O’Connor, H., & Madge, C. (2004). My mum’s thirty years out of date. *Community, Work & Family*, 7(3), 351–369. https://doi.org/10.1080/136688042000295754

Olsson, M., Druss, B. G., & Marcus, S. C. (2015). Trends in mental health care among children and adolescents. *New England Journal of Medicine*, 372(21), 2029–2038. https://doi.org/10.1056/NEJMsa1413512

Oudhof, M., de Wolff, M. S., Ruiter, M. D., Kamphuis, M., L’Hoir, M. P., & Prinsen, B. (2013). *JGZ richtlijn opvoedingsondersteuning voor hulp bij opvoedingsvragen en lichte opvoedingsproblemen*. Nederland Centrum Jeugdgezondheid (NCJ).

Pehora, C., Gajaria, N., Stoute, M., Fracassa, S., Serebale-O’Sullivan, R., & Matava, C. T. (2015). Are parents getting it right? A survey of parents’ internet use for children’s health care information. *Interactive Journal of Medical Research*, 4(2), e3790. https://doi.org/10.2196/ijmr.3790

Plantin, L., & Daneback, K. (2009). Parenthood, information and support on the internet. A literature review of research on parents and professionals online. *BMC Family Practice*, 10(1), 34.

Radey, M., & Randolph, K. A. (2009). Parenting sources: How do parents differ in their efforts to learn about parenting? *Family Relations*, 58(5), 536–548. https://doi.org/10.1111/j.1741-3729.2009.00573.x

Rathbone, A., & Prescott, J. (2019). “I Feel Like A Neurotic Mother at Times”—a mixed methods study exploring online health information seeking behaviour in new parents. *mHealth*, 5, 14. https://doi.org/10.21037/mhealth.2019.05.02

Reijneveld, S. A., de Meer, G., Wiefferink, C. H., & Crone, M. R. (2008). Parents’ concerns about children are highly prevalent but often not confirmed by child doctors and nurses. *BMC Public Health*, 8(1), 124. https://doi.org/10.1186/1471-2458-8-124

Rothbaum, F., Martland, N., & Janssen, J. B. (2008). Parents’ reliance on the Web to find information about children and families: Socio-economic differences in use, skills and satisfaction. *Journal of Applied Developmental Psychology*, 29(2), 118–128. https://doi.org/10.1016/j.appdev.2007.12.002

Sarkadi, A., & Bremberg, S. (2005). Socially unbiased parenting support on the Internet: A cross-sectional study of users of a large Swedish parenting website. *Child: Care, Health and Development*, 31(1), 43–52. https://doi.org/10.1111/j.1365-2214.2005.00475.x

Statistics, U. I. F. (2012). International standard classification of education: ISCED 2011. UNESCO Institute for Statistics Montreal.

Stern, M. J., Cotten, S. R., & Drentea, P. (2012). The separate spheres of online health: Gender, parenting, and online health information searching in the information age. *Journal of Family Issues*, 33(10), 1324–1350. https://doi.org/10.1177/0192513X11425459

Van Dijk, J. A. G. M. (2006). Digital divide research, achievements and shortcomings. *Poetics*, 34(4–5), 221–235. https://doi.org/10.1016/j.poetic.2006.05.004

Walker, S. K. (2005). Use of a parenting newsletter series and other child-rearing information sources by mothers of infants. *Family and Consumer Sciences Research Journal*, 34(2), 153–172. https://doi.org/10.1177/1077727X05280661

Walker, S. K., & Riley, D. A. (2001). Involvement of the personal social network as a factor in parent education effectiveness. *Family Relations*, 50(2), 186–193. https://doi.org/10.1111/j.1741-3729.2001.00186.x

Wien, K., Bhattacharai, A., Pedram, P., Dores, A., Williams, J., Bulloch, A., & Patten, S. (2020). A growing need for youth mental health services in Canada: examining trends in youth mental health from 2011 to 2018. *Epidemiology and Psychiatric Sciences*, 29.

Windhorst, D. A., Fang, Y., Fierloos, I. N., Crone, M. R., Van Mourik, K., Jonkman, H., Hosman, C. M. H., Jansen, W., & Raat, H. (2019). Evaluation of effectiveness of (elements of) parenting support in daily practice of preventive youth health care; design of a naturalistic effect evaluation in ‘CIKEO’(consortium integration knowledge promotion effectiveness of parenting interventions). *BMC Public Health*, 19(1), 1–9. https://doi.org/10.1186/s12889-019-7785-y

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