Work Experience and Style Explain Variation Among Pediatricians in the Detection of Children With Psychosocial Problems

Theunissen, Meinou H. C.; Vogels, Antonius G. C.; Reijneveld, Sijmen

Published in:
Academic Pediatrics

IMPORTANT NOTE: You are advised to consult the publisher’s version (publisher’s PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2012

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Copyright
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.
Work Experience and Style Explain Variation Among Pediatricians in the Detection of Children With Psychosocial Problems

Meinou H. C. Theunissen, MSc; Antonius G. C. Vogels, PhD; Sijmen A. Reijneveld, MD, PhD

ABSTRACT

OBJECTIVE: To assess whether variation in the proportion of children identified as having psychosocial problems by individual preventive pediatricians can be explained by pediatrician characteristics, over and above variations in the mix of children. Furthermore, to assess whether the characteristics of preventive pediatricians were related to the quality of problem identification.

METHODS: We used data from approximately 3070 children ages 5 to 6 years who were assessed during a routine well-child visit by a preventive pediatrician in the Netherlands (response rate 85.2%). We obtained data about parent-reported child problems by using the Child Behavior Checklist (CBCL), sociodemographic background of the family, and characteristics of the preventive pediatrician. After each assessment, preventive pediatricians reported whether they had identified any psychosocial problem in the child. Multilevel logistic regression analyses were used to assess whether variation in the proportion of children identified by preventive pediatricians as having a psychosocial problem could be explained by the characteristics of preventive pediatricians and whether these characteristics were related to the quality of problem identification.

RESULTS: Preventive pediatricians varied widely in the proportion of children identified as having psychosocial problems. Pediatrician characteristics such as work experience and work style (for example, on indication use of behavior questionnaires like the CBCL in routine care) explained about a quarter of this inter-pediatrician variation; child characteristics did not explain this variation even though characteristics like gender and parental education level were associated with likelihood of problem identification. More use of the CBCL and less use of the Teacher Report Form in routine care resulted in a better problem identification by preventive pediatricians. Work experience was not related to better problem identification.

CONCLUSIONS: Preventive pediatricians identify psychosocial problems in children in a standardized way, but important inter-pediatrician variation remains. This variation may be reduced further and quality improved by changing their work style and targeted training.

KEYWORDS: child mental health; physician decision making; public health

WHAT'S NEW

The proportion of children identified with psychosocial problems varies widely between individual preventive pediatricians. This variation can partly be explained by preventive pediatrician characteristics such as work experience and style (ie, using behavior questionnaires).

ACADEMIC PEDIATRICS 2012;12:495–501

WHAT'S NEW

The proportion of children identified with psychosocial problems varies widely between individual preventive pediatricians. This variation can partly be explained by preventive pediatrician characteristics such as work experience and style (ie, using behavior questionnaires).
preventive pediatricians can be explained by preventive pediatricians' characteristics. For instance, one of the predictors of the identification of psychosocial problems is whether mothers disclose concerns about their child's psychosocial functioning to the physician.\textsuperscript{11} Specific aspects of physician interview style and communication skills have been shown to increase the disclosure of these concerns.\textsuperscript{12,13}

The aim of this study is to assess whether characteristics of preventive pediatricians explain the variation between them in the identification of children as having psychosocial problems. Furthermore, we investigated whether the characteristics of preventive pediatricians were related to better problem identification by preventive pediatricians.

**METHODS**

A randomized controlled trial (RCT) was conducted in 2001/2002 to evaluate the effects of a training program for improving preventive pediatricians' diagnostic skills \((n = 58)\) in a national sample of children aged 5 to 6 years \((n = 7737, \text{response 85.2\%})\). The baseline data from the RCT were used to answer our research questions.\textsuperscript{14}

**SAMPLE**

The sample was obtained in a 2-stage procedure. In the first step, all PCH services in the Netherlands (at that time 43) were asked to provide preventive pediatricians for the study; 25 agreed to do so. In total, 58 preventive pediatricians varying from 1 to 6 per PCH service participated. Further information on differences between participating and other preventive pediatricians was not available. The participating preventive pediatricians were a homogenous group. They were all physicians who had the same specialization, this training (specialization) was undertaken at institute, and they had a salaried employment of the PCH service. Preventive pediatricians have obligatory Continuous Medical Education, with evaluations every 5 years, similar to almost all other specialized Dutch physicians. Most participating PCH services operated in a mixed area (ie, a combination of urban and rural area), and 2 services of 25 operated in a large city. The participating services covered populations ranging from 162,000 to 760,608 in 2002.

In the second step, each of the participating preventive pediatricians had to provide a sample of 150 children ages 5 to 6 years. The sample was representative for the Dutch population.\textsuperscript{14} We included only the children who were assessed during baseline measurement periods of the RCT (ie, before the initial training of the preventive pediatricians; \(n = 4007\)). We excluded children of non-Dutch ethnicity, that is, those with at least one parent born outside the Netherlands, from the analysis because previous research has shown that preventive pediatricians have more difficulty in identifying psychosocial problems in non-Dutch children than in Dutch children.\textsuperscript{7,15} We also excluded children receiving treatment for psychosocial problems because their psychosocial problems could be expected to be known to preventive pediatricians already. We were left with a sample of 3070 children.

**MEASUREMENTS AND PROCEDURE**

The data were collected as part of the routine preventive health assessments provided regularly for all Dutch children. The parents completed the CBCL, a well-validated questionnaire about behavioral and emotional problems in the preceding 6 months.\textsuperscript{16–18} The CBCL comprises 120 problem items that are used to compute a Total Problems Score. We dichotomized the CBCL Total Problems Score for the analyses; children were allocated to a normal range or an elevated range, using the 90th percentile gender-specific cut-off points. The CBCL was mailed to parents with the standard invitation for the preventive health assessment. The completed CBCL was returned to the preventive pediatrician in a sealed envelope. The preventive pediatrician forwarded the envelopes to the research institute without opening them.

The preventive pediatrician routinely examined each child; part of this examination is a physical assessment of the child and an interview with the parents about mental health and background. The national guidelines for PCH were followed. After each assessment, the preventive pediatrician answered the following question: “Does the child have a psychosocial problem at this moment?” (yes or no) and scored the severity and type of problem(s) that had been identified. Preventive pediatricians generally have a time frame broader than only “at this moment” because they identify a psychosocial problem on the basis of the interview with the parents, and parents generally refer to a longer period before the routine examination.

The preventive pediatrician recorded the sociodemographic characteristics of the child and family: child age and gender, parental educational level and employment status, and family composition. Parental educational level concerned the greatest level of education completed successfully by a parent. Family composition focused on the number of parents in the family (two parents or one parent). These child characteristics are presented in Table 1.

We also obtained data about preventive pediatrician characteristics. At the start of the study, all participating preventive pediatricians completed a questionnaire about their own background. This questionnaire covered the preventive pediatrician’s age and gender, work experience, use of behavior questionnaires as aids for early detection, and previous participation in courses for the identification of psychosocial problems. Work experience was expressed as the number of years working as a preventive pediatrician. “Use of questionnaires” concerned the extent (ie, always/on indication or never) to which each preventive pediatrician used the National Checklist for indicating Psychosocial Problems in Five/Six Year Olds (LSPPK)\textsuperscript{19} and/or the CBCL and Teacher Report Form (TRF) during assessments.\textsuperscript{20}

In the Netherlands, the LSPPK is a frequently used questionnaire in PCH for detecting psychosocial problems among 5- to 6-year-old children during routine examinations. In services that use the LSPPK, all parents of 5- and 6-year-olds completed the LSPPK. The LSPPK has a cut-off point that results in 8% elevated scores.\textsuperscript{19} The CBCL and TRF were sometimes used by preventive
pediatricians as a diagnostic instrument during follow-up assessments (ie, only on indication in the second stage of the assessment procedure) to confirm psychosocial problems. CBCL and YSR use a cut-off point resulting in 10% of elevated scores.21 The questions about the use of the LSPPK, CBCL, and TRF among preventive pediatricians did not refer to the study setting but to the on-indication use in routine provision of care, that is, outside the study setting. CBCLs as filled out in the study by parents were not transferred to the preventive pediatricians concerned. All characteristics of the preventive pediatrician are presented in Table 2.

**ANALYSIS**

First, we assessed whether the variation in the proportion of children identified as having problems by individual preventive pediatricians were larger than might be expected on the basis of a normal distribution using a \( \chi^2 \) test between identified problems by preventive pediatricians and characteristic of the child. Characteristics \( P < .01 \) were included in the multilevel models.

**CHARACTERISTICS OF CHILDREN AND PREVENTIVE PEDIATRICANS**

The number of children examined by each individual preventive pediatrician varied between 8 and 95, with a mean of 52.9. In total, 26.2% of all children were identified as having a psychosocial problem. Figure 1 shows that this proportion varied widely between individual preventive pediatricians. This variation was significantly larger than could be expected on the basis of chance alone (Pearson \( \chi^2 = 270 [57], P < .01 \)).

Table 2 shows that 19% of the preventive pediatricians were males. Fourteen percent of the preventive pediatricians were 24 to 30 years of age, 26% were 31 to 40 years of age, 43% were 41 to 50 years of age and 17% was 51 years or older. Nearly two-thirds of the preventive pediatricians had 11 or more years working experience.
We first assessed the degree to which the proportion of children identified as having problems varied by preventive pediatrician and found that the ICC and the MOR were 0.099 and 1.77, respectively. The MOR value indicates that when 2 preventive pediatricians are selected at random, the odds that one of them identifies children with psychosocial problems are, on average, 77% greater than for the other.

Table 3 presents the results of the subsequent models. CBCL score was significantly related to problem identification by preventive pediatricians (model 2). However, the variation between preventive pediatricians cannot be explained by CBCL score; the proportion of variation between preventive pediatricians did not decrease (MOR 1.84).

In model 3, we added preventive pediatrician characteristics as predictors. The results of this model showed that most preventive pediatrician characteristics were significantly related to problem identification by preventive pediatrician (P < .01), except for preventive pediatrician age and the use of the LSPPK. The MOR indices decrease from 1.84 to 1.61, indicating that preventive pediatrician characteristics explain about a quarter of the inter-pediatrician variation.

In model 4 we added sociodemographic characteristics of the child. The results showed that these characteristics were significantly related to problem identification by preventive pediatricians. However, their inclusion did not reduce inter-pediatrician variation (MOR = 1.64). In other words; sociodemographic characteristics of the child cannot explain the variation between preventive pediatricians.

In model 5, we added the degree to which significant preventive pediatrician characteristics as identified in model 4 (ie, work experience, on indication-use of CBCL and TRF) strengthened the association of identification with CBCL score. The results of this model showed that more use of the CBCL (odds ratio [OR] 3.04; 95% confidence interval [95% CI] 1.13–8.20; P < .05) and less use related to problem identification by preventive pediatrician (P < .01), except for preventive pediatrician age and the use of the LSPPK. The MOR indices decrease from 1.84 to 1.61, indicating that preventive pediatrician characteristics explain about a quarter of the inter-pediatrician variation.

In model 4 we added sociodemographic characteristics of the child. The results showed that these characteristics were significantly related to problem identification by preventive pediatricians. However, their inclusion did not reduce inter-pediatrician variation (MOR = 1.64). In other words; sociodemographic characteristics of the child cannot explain the variation between preventive pediatricians.

In model 5, we added the degree to which significant preventive pediatrician characteristics as identified in model 4 (ie, work experience, on indication-use of CBCL and TRF) strengthened the association of identification with CBCL score. The results of this model showed that more use of the CBCL (odds ratio [OR] 3.04; 95% confidence interval [95% CI] 1.13–8.20; P < .05) and less use

### Table 2. Characteristics of Preventive Pediatricians Involved in the Study

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N = 58</th>
<th>%*</th>
<th>% of Children Identified as Having Problems</th>
<th>P†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>19</td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>Female</td>
<td>47</td>
<td>81</td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24–30</td>
<td>8</td>
<td>13.8</td>
<td></td>
<td>36.7</td>
</tr>
<tr>
<td>31–40</td>
<td>15</td>
<td>25.9</td>
<td></td>
<td>25.2</td>
</tr>
<tr>
<td>41–50</td>
<td>25</td>
<td>43.1</td>
<td></td>
<td>23.7</td>
</tr>
<tr>
<td>51 and older</td>
<td>10</td>
<td>17.2</td>
<td></td>
<td>23.1</td>
</tr>
<tr>
<td>Work experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–5 years</td>
<td>18</td>
<td>31.0</td>
<td></td>
<td>29.8</td>
</tr>
<tr>
<td>6–10 years</td>
<td>3</td>
<td>5.2</td>
<td></td>
<td>29.8</td>
</tr>
<tr>
<td>11–15 years</td>
<td>13</td>
<td>22.4</td>
<td></td>
<td>26.1</td>
</tr>
<tr>
<td>16–20 years</td>
<td>13</td>
<td>22.4</td>
<td></td>
<td>23.1</td>
</tr>
<tr>
<td>21 years or more</td>
<td>11</td>
<td>19.0</td>
<td></td>
<td>22.6</td>
</tr>
<tr>
<td>Participation in previous courses on early detection of psychosocial problems</td>
<td></td>
<td></td>
<td></td>
<td>.19</td>
</tr>
<tr>
<td>Within the last 5 years</td>
<td>30</td>
<td>51.7</td>
<td></td>
<td>26.7</td>
</tr>
<tr>
<td>More than 5 years ago</td>
<td>8</td>
<td>13.8</td>
<td></td>
<td>23.1</td>
</tr>
<tr>
<td>Did not participate in courses</td>
<td>18</td>
<td>31.0</td>
<td></td>
<td>27.1</td>
</tr>
<tr>
<td>Unknown</td>
<td>2</td>
<td>3.4</td>
<td></td>
<td>20.3</td>
</tr>
<tr>
<td>On indication use of the CBCL‡</td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Never</td>
<td>31</td>
<td>53.4</td>
<td></td>
<td>27.4</td>
</tr>
<tr>
<td>Always/on indication</td>
<td>13</td>
<td>22.4</td>
<td></td>
<td>18.5</td>
</tr>
<tr>
<td>Unknown</td>
<td>14</td>
<td>24.1</td>
<td></td>
<td>30.5</td>
</tr>
<tr>
<td>Use of the LSPPK for universal screening‡</td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Never</td>
<td>23</td>
<td>39.7</td>
<td></td>
<td>22.5</td>
</tr>
<tr>
<td>Always/on indication</td>
<td>27</td>
<td>46.4</td>
<td></td>
<td>29.7</td>
</tr>
<tr>
<td>Unknown</td>
<td>8</td>
<td>13.8</td>
<td></td>
<td>24.8</td>
</tr>
<tr>
<td>On indication use of the TRF‡</td>
<td></td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Never</td>
<td>34</td>
<td>58.6</td>
<td></td>
<td>26.1</td>
</tr>
<tr>
<td>Always/on indication</td>
<td>10</td>
<td>17.2</td>
<td></td>
<td>19.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>14</td>
<td>24.1</td>
<td></td>
<td>30.1</td>
</tr>
<tr>
<td>Percentages of children of non-Dutch ethnicity</td>
<td></td>
<td></td>
<td></td>
<td>.027§</td>
</tr>
<tr>
<td>1–20%</td>
<td>44</td>
<td>75.9</td>
<td></td>
<td>25.5</td>
</tr>
<tr>
<td>21–40%</td>
<td>12</td>
<td>20.7</td>
<td></td>
<td>30.4</td>
</tr>
<tr>
<td>41–100%</td>
<td>2</td>
<td>3.4</td>
<td></td>
<td>22.2</td>
</tr>
</tbody>
</table>

*Percentages do not add up to 100% because of rounding.
†χ² test between identified problems by preventive pediatrician and characteristics of the pediatrician. Characteristics P < .01 were included in the multilevel models.
‡CBCL indicates Child Behavior Checklist; LSPPK, National Checklist for indicating Psychosocial Problems in Five/six year olds; TRF, Teacher’s Report Form.
§We limited χ² test to the categories 1–20% and 21–40% because of the small numbers in the category 41–100% (n < 5).
of the TRF (OR 0.41; 95% CI 0.15–1.11; P < .10) results in a better problem identification by preventive pediatricians. Work experience was not related to a better problem identification by preventive pediatricians (OR 0.94; 95% CI 0.77–1.15; P = .57; not shown). The results were similar in the subgroup of children that preventive pediatricians had identified as having moderate or severe problems.

**DISCUSSION**

This study shows that preventive pediatricians vary widely in the proportion of children they identify as having psychosocial problems. When 2 preventive pediatricians are selected at random, the odds that one of them identifies children with psychosocial problems is on average 84% greater than for the other when the prevalence of parent-reported problems is equal. Preventive pediatrician characteristics such as work experience (ie, number of years working) and use of behavior questionnaires (ie, use of CBCL and TRF) explain approximately one-quarter of this inter-pediatrician variation, indicated by a decrease in MOR when these characteristics were added to the model. The occurrence of problems (measured by CBCL score) and background of the child do not have any effect on the inter-pediatrician variation, that is, variations in the mix of children that they assess did not explain variation between pediatricians.

The extent of the inter-pediatrician variation in early identification can be considered to be relatively large. A MOR of 1.84 is much larger than acceptable for clinical tests, even though the assessment of psychosocial problems is much more complex than such tests. However, a MOR of 1.84 is much smaller than the OR for an elevated CBCL of 4.68. Seen from this perspective, inter-pediatrician variation is quite small compared with an indicator of the quality of the early identification. The performance of these preventive pediatricians in routine practice should be improved, however. Preventive pediatricians failed to identify psychosocial problems in about half the children whose parents reported serious problems on the CBCL. The latter implies that further containment of inter-pediatrician variation is necessary, evidently aiming at an increase of the overall quality of identification.

We found that child characteristics did not explain the inter-pediatrician variation in the identification of psychosocial problems, whereas preventive pediatrician characteristics did. Regarding child characteristics, this confirms the findings of Vogels et al, who investigated the influence of these characteristics on inter-pediatrician variation in older children. Regarding preventive pediatricians characteristics, we were the first to investigate the influence of these characteristics on inter-pediatrician variation in the identification of children with psychosocial problems. Our findings show that the use of additional diagnostic tools like the CBCL and TRF explained some inter-pediatrician variation. The same holds for the number of years worked. The lack of an effect of the preventive pediatrician age also shows that this is not just due to ageing.

Furthermore, our findings show that on-indication use of the CBCL is related to an improved problem identification by preventive pediatricians. Interventions to improve identification by preventive pediatricians might be in particular targeted at this factor and also at the methodical working style for which it stands. Less on-indication use of the teacher-reported TRF is associated with a better problem identification by preventive pediatricians. This finding is not surprising because the TRF is completed by the teacher whereas we used parent-information to determine the quality of identification by the preventive pediatricians. Information from a different informant, the teacher, may then lead to a weakening of the association of the preventive pediatrician’s identification with parent-report but have added value despite this issue.

A considerable part of inter-pediatrician variation persisted after adjustment for their preventive pediatrician characteristics, which may indicate that other factors, not included in our study, also account for differences between preventive pediatricians. Evidence shows that practice factors have a major impact on communications between physicians and families. For instance, practices with outcome measurements and practices that are rewarded on the basis of quality or performance all improve their processes including identification. The contribution of these contextual factors to inter-pediatrician variation in the identification of psychosocial problems therefore deserves further study.

Preventive pediatricians identified 26.2% of all children as having psychosocial problems, a similar rate as in previous studies. This rate is much greater than the prevalence of psychosocial problems, measured by an elevated score on the CBCL (9.3%). The latter prevalence should be interpreted with caution because we used CBCL cut-off points based on the 90th percentile. Several reasons may explain these different prevalence rates. First, preventive pediatricians also identify children with mild problems because these children may benefit most from the relatively light interventions that are offered in primary care settings. Another explanation may be that some children are falsely identified as having psychosocial problems by preventive pediatricians. This may also relate to our finding that more experienced preventive pediatrician identified fewer cases.

![Number of preventive pediatricians by proportion of children identified as having a psychosocial problem](image-url)
STRENGTHS AND LIMITATIONS

Our study had a number of strengths. The response rate in this study was high and the sample covered the entire Netherlands as a population, limiting the likelihood of selective response. Furthermore, we analyzed data for children who were assessed during routine practice, limiting the likelihood of biased results.

Three methodological limitations may have affected our findings. First, children with non-Dutch ethnicity were not included in our analysis because previous research has shown that preventive pediatricians have more difficulty in identifying psychosocial problems in non-Dutch children than in Dutch children.\textsuperscript{15,26} We therefore expect variation between preventive pediatricians in the identification of psychosocial problems to be even larger when children of non-Dutch ethnicity are involved.

Second, although data collection was performed in the context of routine care, preventive pediatricians who participated in this study may be on average more interested in the identification of children with psychosocial problems. In addition, a Hawthorne effect may cause preventive pediatricians who participated in this study to modify an aspect of their behavior because they knew that their performance was studied. Both factors may cause our study to underestimate the size of inter-pediatrician variation.

Third, we used the CBCL as gold standard in determining quality of identification but this only provides parent-information, whereas preventive pediatricians also target at mild problems. Both factors will lead to an underestimation of the quality of identification in this study.

IMPLICATIONS

Preventive pediatricians seem to be able to identify psychosocial problems in children in a standardized way, although important inter-pediatrician variation remains. Our findings show that the use of high-quality questionnaires...
as included in our regression model reduces inter-pediatrician variation, and it is likely that these questionnaires improve overall quality.\textsuperscript{27,28} It is rather likely that the use of high-quality questionnaires is a proxy for methodical working and that this reduces inter-pediatrician variation. If true, this implies that methodical working should be enhanced by, for instance, increased use of high quality questionnaires, in particular of short ones such as the SDQ or PSC.\textsuperscript{27,28} This may require additional training, and also an extension of the time that is available per visit.

Second, our findings show that number of years worked explains some inter-pediatrician variation. The acquisition of the underlying physician skills may be accelerated in several ways, for instance by on-the-job coaching for preventive pediatricians and by training preventive pediatricians in the use of guidelines. The latter has indeed been found to enhance the quality of problem identification,\textsuperscript{14} even though this effect extinguished rather rapidly. The latter shows that continuous efforts are needed to attain a lasting improvement in the identification of psychosocial problems, which should preferably be imbedded in the entire work process of the PCH. Moreover, in general, our findings show the importance of certain factors regarding inter-pediatrician variation in identification. Interventions to improve the identification by preventive pediatricians might be in particular targeted at those factors. However, their effectiveness requires additional study. In conclusion, preventive pediatricians seem to be able to identify psychosocial problems in children with a substantial degree of standardization. Despite this, further improvement seems to be attainable.

ACKNOWLEDGMENTS

The original research received financial support from the Netherlands Organization for Health Research and Development (ZonMw) and the foundation of children’s welfare stamps Netherlands. The analysis and interpretation of the data with respect to this article was made possible by TNO funding.

REFERENCES