

Concerns of Parents Requesting Screening Tests for Their Children: a cross-sectional study

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Research article

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Abstract

Background and objective

While previous researchers provide insights into parental concerns about emotional, developmental, or behavioural problems in children, it is not known how children's complaints and possible medical conditions related to these complaints impact parent concerns. The aim of this study is to investigate concerns of parents visiting a family physician to request screening tests for their own child.

Methods

Our sample was 407 children aged 2-16 years visiting a family physician for screening in Rize, a city in the Black Sea (Northern part) Region of Turkey, from January 2019 to January 2020. After January 2020, the researchers contacted 407 parents of the children by telephone and they completed the questionnaire via phone calls. The questionnaire includes sociodemographic data, parents' opinion about screening tests, parent concern scores, children's complaints and probable medical conditions related with those complaints during the visit. The data was analyzed using the SPSS (SPSS v26) statistical analysis program.

Results

The mean age of the children was 7.9 ± 4.2 years and the mean age of the parents was 31.7 ± 8.3 years. Of the parents, 65.8% (n=268) were female and of the children, 54.1% (n=220) were male. Of the parents, 60.0% (n=244) had concerns when they requested screening tests for their own child. Of the children, 40.0% (n=163) had no complaints. Of the parents, 56.8% (n=231) were not in favor of requesting a screening test for their child if he/she had no complaints. There was a significant relationship between parents' opinion about screening tests and parent concerns/children's complaints ($p < 0.001$). Children's complaints and probable medical conditions related with the complaints had significant impact on the mean score of parent concerns ($p < 0.001$).

Conclusions

This study has shown that most of the children who underwent screening were not asymptomatic and most of the parents who requested screening tests for their own child had concerns related with their child's complaint/s. The concerns of parents were the main motivation for requesting screening.

Background

When a patient request periodic health examination (PHE) or screening tests, physicians may assume it is for detection of an asymptomatic disease. In this context, most recommendations for PHE/Screening are based largely on the prevalence of preventable disease in asymptomatic individuals [1]. However, a prospective study has shown that the majority of patients with demand of a check-up were motivated by some specific symptoms and health concerns and were not "asymptomatic" [2]. These aspects may be

systematically ignored or overlooked in PHE consultations while the physicians tend to focus on delivering recommended screenings.

The presence of a physical symptom with no obvious diagnosis, apparent cause, or clear mechanism can give rise to feelings of uncertainty, anxiety, and impotence in the patient. In the absence of clear and reliable information, people often suspect that their symptoms are caused by the disease everyone dreads [3]. Parents who feel that their child's health is threatened by a symptom will request diagnostic tests to understand the mechanism of the disease.

Patients who consult a physician have many doubts, fears, and expectations, and some of these concerns may never be expressed if the physician do not proactively elicit them [4]. Also, if a physician elicits parents' concerns about their child's health problems, it can help the physician to manage prevention, diagnostic and treatment process. In a study on autism, it has been shown that eliciting parents' concerns about their child's development was a key component of early detection of autism [5]. In a study on factors associated with parent concern for child weight and parenting behaviors, overweight parents are more likely to have concerns about overweight status in their own child [6]. Also, the study showed that the parent's concern about their child's overweight status is an important precursor or determinant of preventative actions. Several studies provided evidence for parents' concerns high sensitivity in identifying developmental delays in children. Parents' concerns for speech, language, motor or cognitive skills were indicators of developmental delay [7–10].

In addition to parent's concerns for own children, the parent's wishes—in other words, the expectations they have when they consult a doctor—are important facet of hidden agenda. Parents may also have specific expectations for their children, such as requesting a diagnostic test or procedure. Furthermore, physicians need to be aware of “hidden agendas”, as patients often request screening tests as a reason for consultation to raise the issue of a specific problem that troubles them, to use the family physician as a counsellor to discuss problems, to seek reassurance regarding undeclared symptoms or to feel relief [11]. Patients who request screening tests/PHE may expect more than just routine screening in accordance with the current clinical guidelines [12–14].

There is an extensive body of research concerning the identification of parental concerns regarding specific groups of parents, determined medical conditions or different children's problems [15]. The results of a longitudinal study indicated that negative behaviours were the most frequent cause for concern and that there were certain ages (2–3 years old) that caused more concern in parents [16]. A study (2006) using data from the 2003 National Survey of Children's Health, with 102,353 children from the United States, reported rates of parental concerns about emotional, developmental, or behavioural problems much higher than the rates of children that were actually diagnosed with those problems [17]. In a study which identified parents' concerns in 1202 Australian parents of children from 2 to 16 years old, parents were mostly concerned about their child's education (35%), child's health and well-being (25%) and violence, drugs and alcohol (20%) [18]. The studies named Parents' Evaluation of

Developmental Status provided evidence that parental concerns were highly predictive of behavioural and developmental problems in children [19].

While previous researchers provide insights into parental concerns about emotional, developmental, or behavioural problems in children, it is not known how children's complaints/symptoms and possible medical conditions related to these complaints/symptoms impact parent concerns. The current study investigates concerns of parents visiting a family physician to request screening tests for their own child.

Methods

Sample

Of total 466 children aged 2–16 years who underwent screening tests from January 2019 to January 2020, 18 were excluded for not meeting the eligibility criteria and 41 have not been contacted by telephone. Our sample was 407 children aged 2–16 years. 407 parents (father or mother) completed the questionnaire.

Research design and setting

This study was designed as a cross-sectional study. Of total 448 (18 were excluded for not meeting the eligibility criteria) children aged 2–16 years who underwent screening were enrolled during their visit to a family physician in Rize in the Black Sea (Northern part) Region of Turkey, from January 2019 to January 2020. Children with a medical diagnosis (psychiatric disorders, diabetes mellitus, hypothyroidism, congenital disorders, growth and developmental delay, immune system disorders, epilepsy etc.), and with a history of surgery were not included. Screening test results have been ignored.

After the enrolment completed (after January 2020), the researchers contacted 407 parents (41 have not been contacted by telephone) of the children by telephone and they completed the questionnaire via phone calls. The consent we obtained from study participants was written. The questionnaire included sociodemographic data, parents' opinion about screening tests, parent concern scores, children's complaints and probable medical conditions related with the complaints during the visit. In this study, it was investigated how children's complaints and probable medical conditions related with them had impact on parents being in favor of requesting screening for their own child. Research was completed between April 2020 to June 2020.

Screening

The screening tests for children aged 2–16 years are based on Periodic Health Examinations and Screening Tests Guideline for Family Practice in Turkey 2015 [20]. The guideline recommends screening for high blood pressure once a year with blood pressure measurement in children aged 3 to 18 years. The guideline recommends screening for obesity once a year with weight and height measurement and body mass index (BMI) calculation in children aged 6 to 18 years. The guideline recommends nutritional counselling at least once in preschool age and school age children. The guideline recommends blood

tests, at least once, including fasting blood glucose, hemoglobin A1c, thyroid function tests (T3, T4, and TSH), iron, ferritin, hemogram, alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), gamma-glutamyl transferase (GGT), urea and creatinine in children aged 2 to 16 years. When parents requested screening tests for their child, we often tended to focus on delivering recommended screenings without eliciting parents' concerns or children's complaints/symptoms.

The guideline also contains recommendations for violence, drugs, tobacco use and alcohol consumption, behavioural and developmental problems in children and adolescents. But these issues were not the subject of the current study.

Data collection tool

The data collection tool used in this study included a questionnaire. The questionnaire used in our study was developed for this study by the authors. We designed the questionnaire including parents' and children's age and gender, parents' opinion 'children should or should not undergo screening tests periodically', whether parents had concerns or not related with children's complaints when they requested screening tests for their children, what children's complaints/symptoms was/were and parents' opinion about probable medical conditions related with the complaints/symptoms. In addition, parent concern scores were scored based on 5-point Likert scale; 'a little concerned' (1 point), 'somewhat concerned' (2 point), 'concerned' (3 point), 'very concerned' (4 point), 'extremely concerned' (5 point). Higher score means higher level of parent concern.

Data analysis

Data was analyzed using the SPSS 26 statistical analysis program. Parent concern scores, parents' and children's age were analyzed as mean, standard deviation, minimum and maximum score. The normality of the data was examined using the Kolmogorov-Smirnov test. Descriptive statistics, including number and percentage, were used to describe parents' and children's genders, children's complaints/symptoms, possible medical conditions related to the complaints/symptoms and being or not being in favor of undergoing screening tests. The Regression Analysis test was used to determine the impact of children's complaints/symptoms and possible medical conditions on the mean score of parent concerns. The ANOVA test was used to compare the mean scores of parent concerns between the groups in terms of children's complaints/symptoms and probable medical conditions. The level of significance was set as $p < 0.05$.

Results

The mean age of the children was 7.9 ± 4.2 years and the mean age of the parents was 31.7 ± 8.3 years. Of the parents, 65.8% ($n = 268$) were female and of the children, 54.1% ($n = 220$) were male (Table 1).

Parent concern

Of the parents, 60.0% (n = 244) had concerns when they requested screening tests for their own child. Of the children, 40.0% (n = 163) had no complaints. We asked the parents "Should all children undergo screening tests periodically if they have no complaints?", 56.8% (n = 231) stated 'no'. There was a significant relationship between parents' opinion about screening tests and parent concerns/children's complaints ($p < 0.001$, Odds Ratio for parents' opinion (yes/no): 12.68%95 CI: 7.42–21.66) (Table 1).

Table 1
Sociodemographic characteristics, parents' opinion about screening tests and parent concern

Characteristics	n (%)	
Number of participants	407 (100)	
Mean Age (SD)	Parent	31.7 (8.3)
	Child	7.9 (4.2)
Parent gender	Female	268 (65.8)
	Male	139 (34.2)
Child gender	Female	187 (45.9)
	Male	220 (54.1)
All children should undergo screening tests periodically	Yes	176 (43.2)
	No	231 (56.8)
Parent concerns/Children's complaints	Yes	244 (60.0)
	No	163 (40.0)

Children's complaints and parent concern

We asked the parents who had concerns (n = 244) "What were your child's complaints when you requested screening tests for your child?", 24.2% (n = 59) stated frequent colds, 23.8% (n = 58) loss of appetite, 19.7% (n = 48) thin, 11.1% (n = 27) increased thirst-frequent urination, 8.6% (n = 21) weight gain, 7.8% (n = 19) 'others' (long-term or recurring non-severe abdominal pain, recurring knee pain, recurring headache, non-severe cough when the child first lies down at night), and 4.9% (n = 12) smaller than other children their age (Fig. 1).

Interaction of children's complaints and the mean scores of parent concerns are shown in Fig. 1. The highest mean score of parent concerns was 4.1 ± 0.8 of parents who stated their children's complaint as increased thirst-frequent urination. The lowest mean score of parent concerns was 2.8 ± 0.6 of parents who stated their children's complaint as weight gain, except the group of 'others' (mean score: 2.7 ± 0.9). There was significant difference between the mean scores of parent concerns ($F_{(6, 237)} = 9.93$; $p < 0.001$). The concern scores of parents who stated their children's complaints as weight gain and 'others' were significantly lower than those of the remaining groups ($p < 0.001$; Post Hoc Test, Tukey).

Probable medical conditions and parent concern

We asked the parents who had concerns (n = 244) "What was your opinion about probable medical condition related with the complaints?", 33.6% (n = 82) stated immune deficiency diseases, 29.9% (n = 73) growth and developmental delay, 17.2% (n = 42) diabetes mellitus, 10.7% (n = 26) 'others' (parasitic infections, a child who doesn't want to go to school, growing pains which causes knee pain, sinusitis, allergic rhinitis), and 8.6% (n = 21) obesity (Fig. 2).

Interaction of probable medical conditions in children and the mean scores of parent concerns are shown in Fig. 2. The highest mean score of parent concerns was 3.9 ± 0.7 of parents who stated their children's probable disease as diabetes mellitus. The lowest mean score of parent concerns was 2.8 ± 0.7 of parents who stated their children's probable disease as obesity. There was significant difference between the mean scores of parent concerns ($F_{(4, 239)} = 13.51$; $p < 0.001$). The concern scores of parents who stated their children's probable disease as obesity and 'others' were significantly lower than those of the remaining groups ($p < 0.001$; Post Hoc Test, Tukey).

Regression analysis showed significant impact of children's complaints and probable medical conditions on the mean score of parent concerns ($p < 0.001$; $R^2 = 0.135$, $p < 0.001$; $R^2 = 0.165$, respectively).

Discussion

PHE/Screening is an important opportunity for early detection of an asymptomatic disease [21]. However, our study showed that less than half of the children were asymptomatic and most of the parents who requested screening tests for their own child not for disease prevention. This study also showed that if a child had any complaints/symptoms, his/her parent had concerns. The parents whose child had complaints/symptoms were more likely in need of relief for these complaints/symptoms. Children's complaints/symptoms and parent concerns related with these complaints/symptoms may be the main motivation for parents requesting a PHE/screening for their child. Our finding was consistent with literature stating that symptoms and health concerns are important stimulus for requesting a PHE/screening [2, 12]. A systematic review has demonstrated that PHE/screening has a beneficial effect on the delivery of some clinical preventive services and may have a beneficial effect on patient worry/concern, providing justification for its continuing implementation in clinical practice [22]. Therefore, recognizing a patient's true concerns and worries is important.

It was also interesting that more than half of the parents were not in favor of requesting a screening test for their child if he/she had no complaints. This indicates that there is not low number of the parents who have the opinion 'screening tests should be requested when children's complaints occur'. A prospective study has shown that the majority of patients requiring a check-up were motivated by specific symptoms [2]. In a systematic review, the authors emphasized that elimination of worry or concerns regarding illness may represent a powerful motivator for action on the patients' side [22].

We examined children's complaints/symptoms and probable medical conditions in detail. In this study, the most common complaint in the children who underwent screening tests was 'frequent colds', and the second most common complaint was 'loss of appetite'. The children experiencing frequent colds visit frequently family physicians and pediatricians in Turkey[23]. Loss of appetite and nutritional difficulties such as food selection and food phobia are common health problems in childhood, especially in infants and young children [24, 25]. In this study, the rarest complaint was 'smaller than other children their age'.

As we expected, parents' opinions about probable diseases depended on children's complaints/symptoms. The most common opinion of the parents about probable medical condition was 'immune deficiency diseases', and the second most common opinion was 'growth and developmental delay'. The rarest opinion was 'obesity'. However, childhood obesity is more common disease than immune deficiency diseases and growth and developmental delay [26].

The current study has shown that there was significant difference between the mean scores of parent concerns by the groups in terms of children's complaints/symptoms. Although 'frequent colds', 'loss of appetite' and 'thin' were common complaints in the children who underwent screening, none of them were the underlying concern that caused the highest mean score of parent concerns. This might result from that those complaints/symptoms are common health problems which are mostly non-severe in children. A study in Turkey found that although parents had concerns related with the thought 'frequent colds might be related with a probable disease', more than half of the children experiencing frequent colds were healthy [23]. Loss of appetite may be a complaint/symptom in 30% of normal growing children [27]. Although 19.7% of parents stated their child's complaint as 'thin' in this study, 1.9% of children under 5 years in Turkey were underweight [28].

The parents who stated their children's complaint as 'increased thirst-frequent urination' had highest mean score of parent concerns. The parents who stated as 'smaller than other children their age' had the second highest mean score. Interestingly, most of the parents who stated their children's complaint as 'weight gain' described their concerns as 'somewhat concerned' and 'concerned', lower than we expected. This indicates that most of parents are not likely to report concern about child weight.

There was also significant difference between the mean scores of parent concerns by the groups in terms of probable medical conditions related with the complaints/symptoms. Although 'immune deficiency diseases' and 'growth and developmental delay' were common probable medical conditions in the children who underwent screening, neither of them was the underlying concern that caused the highest mean score of parent concerns. The parents who stated their children's probable disease as 'diabetes mellitus' had the highest mean score of parent concerns. In a study investigated state - trait anxiety among mothers of diabetic children, the results indicated that mothers whose children suffer from diabetes significantly differed from mothers of healthy children in terms of family functioning and state-trait anxiety; compared to mothers of healthy children, the mothers of the diabetic children were more unhealthy in terms of family functioning and more anxious in terms of state-trait anxiety level [29]. The parents who thought the complaint 'weight gain' might be related with the probable disease 'obesity' had

the lowest mean score of parent concerns. This might result from that normal weight parents are more likely to engage in healthy behaviors and acknowledge overweight in their own children whereas heavier parents may report more concern about child weight [6].

Conclusion

Our study has shown that most of the children who underwent screening were symptomatic and most of the parents who requested screening tests for their own child had concerns related with their child's complaint/s. The concerns of parents were the main motivation for requesting screening. In addition, children's complaints and probable medical conditions related with those complaints had different impacts on parent concerns and parents' motivation for requesting screening.

Limitations

Parent concerns may differ depending on age group of children. We did not divide the children into the groups such as preschool, primary and secondary school-aged children. Thus, it could not be determined how priority concerns of the parents has differed according to those groups.

Abbreviations

PHE

Periodic health examination

BMI

Body mass index

Declarations

Ethics approval and consent to participate

Formal permission was obtained from the Ethics Committee of the Faculty of Medicine of Recep Tayyip Erdogan University (Identification number: 2020/46) and written informed consent was obtained from participating children's parents.

Consent for publication

Not applicable.

Availability of data and materials

The datasets during and/or analysed during the current study available from the corresponding author on reasonable request. The corresponding author: Emrah Ersoy

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Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Emrah Ersoy should be considered the first author.

EE: study design, data analyses/interpretation, data collection/management, manuscript editing, manuscript writing, CA: study design, data interpretation, manuscript editing. All authors read and approved the final manuscript.

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Figures

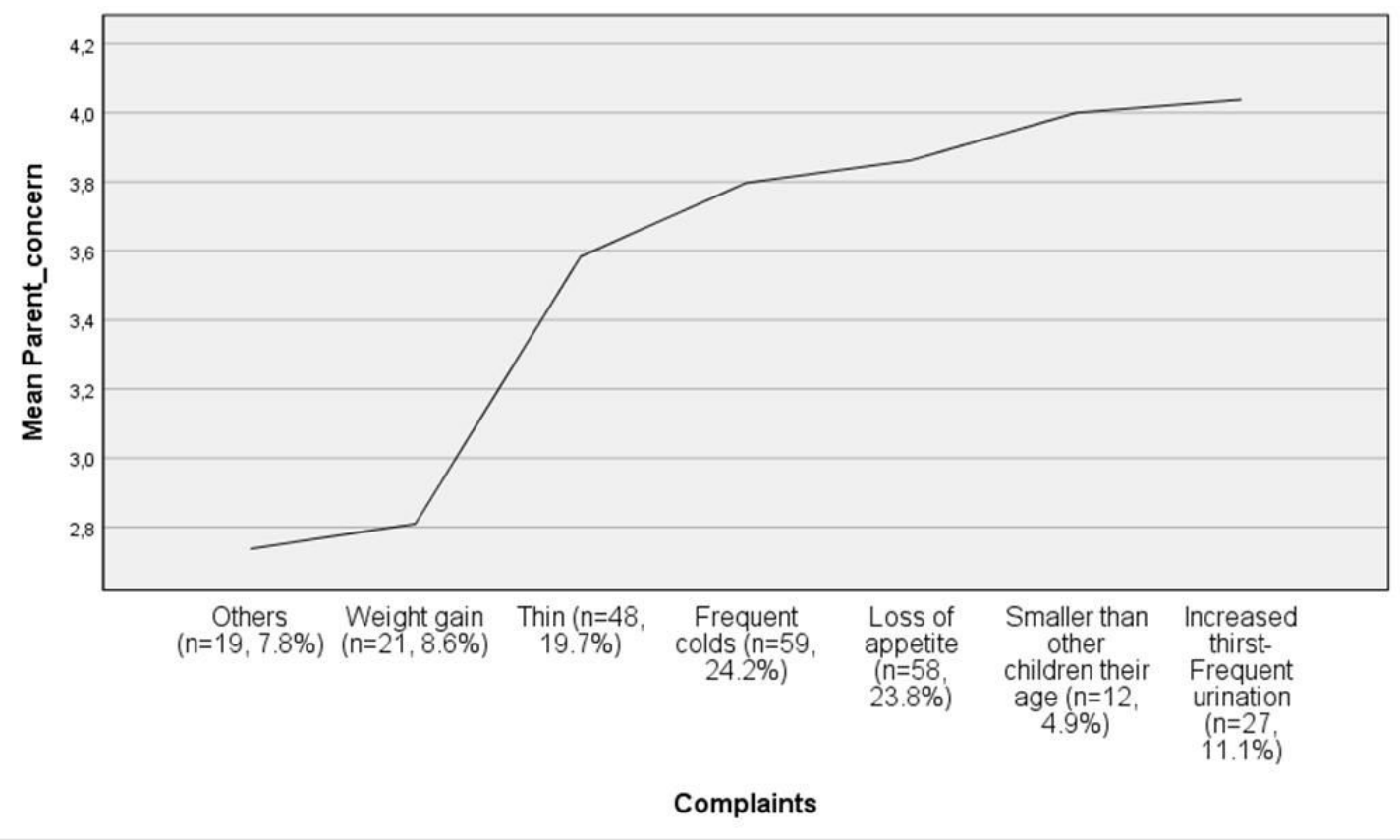


Figure 1

Interaction of children’s complaints and the mean scores of parent concerns (n=244) (Scale for parent concern: 1=a little concerned; 2=somewhat concerned; 3=concerned; 4=very concerned; 5=extremely concerned)

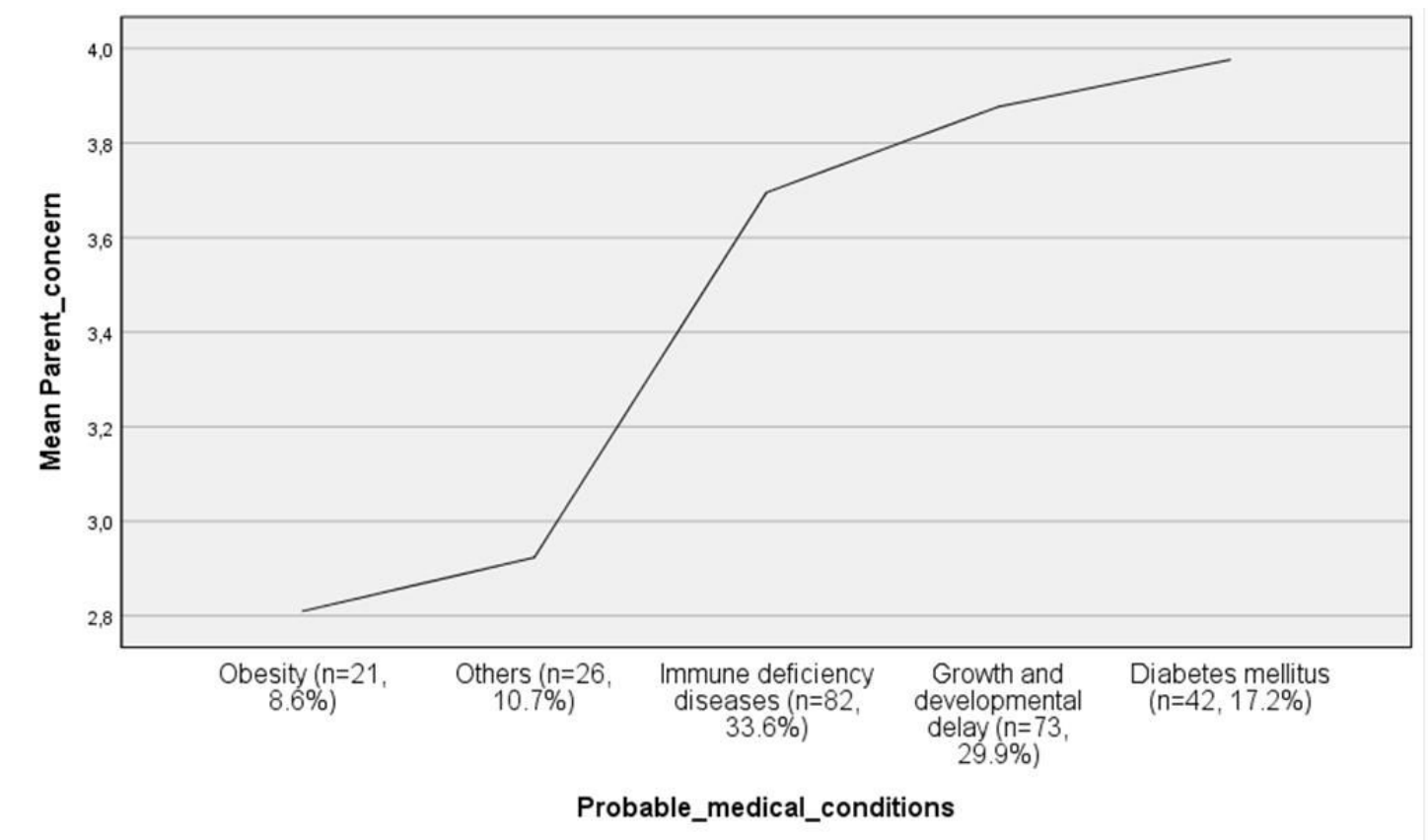


Figure 2

Interaction of probable medical conditions in children and the mean scores of parent concerns (n=244)
(Scale for parent concern: 1=a little concerned; 2=somewhat concerned; 3=concerned; 4=very concerned; 5=extremely concerned)

Supplementary Files

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- [Questionnaire.docx](#)