



General practitioners' practices for malnutrition screening in paediatric populations: a survey in one French department

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Abstract

Background Malnutrition remains a public health problem in Europe, not only in adults, but also in paediatrics. The aim of this study was to evaluate general practitioners (GPs) practices in paediatric malnutrition screening.

Methods An anonymised questionnaire was sent to GPs in one French area. We analysed GPs' data: sociodemographic, knowledge of malnutrition screening, practices, tools, and trainings.

Results Overall, 102 of 174 GPs replied to the questionnaire (58.6%). 79.4% of GPs routinely measured weight, but only 33.3% measured both height and BMI, despite having tools (98.6%). 43.6% of GPs systematically reviewed growth charts. 71.3% were familiar with dietary recommendations, 30.7% with blood tests for nutritional status assessment, and 13.7% with dietary supplements. GPs who routinely measured BMI reviewed significantly more growth charts ($p = 0.001$) and prescribed more dietary supplements ($p = 0.001$).

Conclusions GPs do not sufficiently measure children's height and BMI, despite the increasing availability of software. Failure to analyse growth charts can induce delays in malnutrition screening.

Introduction

Malnutrition remains a public health problem in Europe and developed countries, not only in geriatric and adult chronic diseases, but also in paediatrics. The prevalence of malnutrition in hospitalised children is estimated at 6–18% [1–3]. In primary care, many studies have been done in adults and particularly in elderly people to evaluate and promote malnutrition screening [4], but data are lacking in paediatrics. Paediatric malnutrition may be due to insufficient dietary intake, but it can also be the first symptom of chronic disease requiring diagnosis. As in other countries,

children in France have a child's personal healthcare book (CPHB), in which physicians are able to record weight, height, and BMI. However, we observe that these measurements are not always recorded in the CPHB and that growth charts are not always completed [5]. General practitioners (GPs) have a key role to play in paediatric malnutrition screening, the aim of this study was to evaluate their practices.

Materials and methods

The study was conducted in a population of GPs in a medium-sized city in northwest France. We sent an anonymised questionnaire by e-mail during spring 2019. After 1 month, we sent a second reminder e-mail, and gave out paper questionnaires. The questionnaire consisted of 16 single or multiple-choice questions and one open question. GPs' sociodemographic data were collected (sex, age, percentage of children among their patients). Four questions evaluated GPs' knowledge of paediatric malnutrition (clinical criteria, nutritional recommendations, blood tests for nutritional status assessment and dietary supplements). Other questions evaluated GPs' practices (measurement of weight, height, and BMI; recording of measurements in the

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CPHB; analysis of growth charts; use of tools to calculate BMI; and construct growth charts). Last questions evaluated GPs' expectations in terms of training. Characteristics of GPs who routinely measured BMI in children were compared to those of GPs who never or occasionally measured BMI. Qualitative variables were described as percentages and compared using Chi-square test. The analysis was conducted using XlstatBiomed 19.5 2017. The test result was statistically significant for $p < 0.05$.

Results

In total, 102 of 174 GPs replied to the questionnaire (58.6%). The percentage of children among patients was between 5 and 15% for 55.9% of GPs (between 15 and 30% for 31.4% of GPs, <5% for 7.8%, and >30% for 4.9% of GPs). 57.9% of GPs were more than 50 years old (28.4% <35 years old, 13.7% were between 35 and 50 years old), and the sex ratio was 1.17.

To evaluate malnutrition, GPs mainly used BMI (95.0%), clinical examination (90.0%), and weight (77.4%). Seventy-one percent of GPs claimed that they were familiar with dietary recommendations, 31% with blood tests for nutritional status assessment, and 13.7% with prescribing dietary supplements.

During the medical consultation, 79.4% of GPs routinely measured weight, but only 33.3% systematically measured both height and BMI. 43.6% systematically reviewed growth charts. 79.2% systematically recorded weight and height measurements in the CPHB (Fig. 1). GPs reported three reasons for not doing it (parents forget the CPHB 88.5%, time constraints 31.4%, measurements already recorded in GPs' software 25.7%). 98.6% of GPs had tools to calculate BMI (software 94%, paper disk 39.2%), and 100% of GPs had tools to construct growth charts (CPHB's

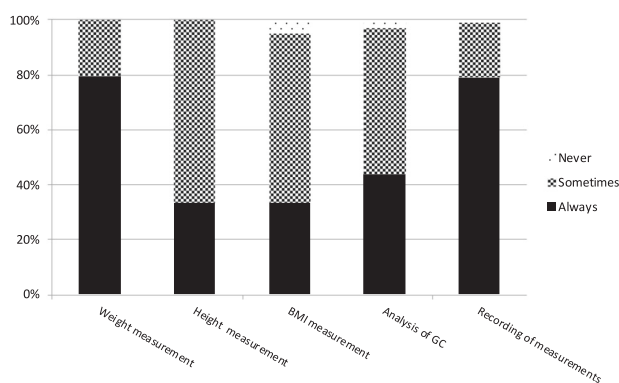


Fig. 1 GPs' practices at each medical consultation (measurements and recording of measurements in the child's personal healthcare book). BMI body mass index, GC growth charts, GPs general practitioners.

growth charts 77.5%, software's growth charts 20.6%, other paper growth charts 1.9%). We identified six different brands of software that have different child growth charts construction (graphics without standard deviation, or French Sempé growth charts with standard deviation).

Only 9.8% of GPs had participated in training courses on malnutrition screening in children, and 89.0% of GPs requested more training on this topic.

GPs who routinely measured BMI (33.3%) reviewed significantly more frequently growth charts (67.6 and 31.3%; $p = 0.001$) and prescribed more dietary supplements in children (26.5 and 7.3%; $p = 0.001$) than those who did not do it (Table 1).

Discussion

This survey shows that the majority of GPs have correctly incorporated BMI as a marker of malnutrition; however, it is insufficiently calculated because child's height is not systematically measured. The lack of height measurements is a recurrent problem, which is also observed in hospital: in a survey done in our general hospital, height measurements were taken in 21% of children, BMI in 10%, and weight in 100% (unpublished data). In another survey, weight and height were measured in 43% of children [6]. One hypothesis is that physicians need weight to calculate drug dose, whereas height is not essential for their practice. Our survey reveals also that growth charts are not systematically analysed, and that software do not always construct accurate growth charts. Failure of GPs to analyse growth charts may lead to under diagnosis of malnutrition. Delay of the diagnosis of malnutrition may have several detrimental consequences: malnutrition may be the early indicator of some underlying evolving serious disease (e.g., cancer, inflammatory bowel disease, eating disorder, coeliac disease); by itself, malnutrition increases the risk of infectious complications; and can impacts negatively the quality of life. Paediatric recommendations for malnutrition screening have been published by learned societies: before analysis of growth chart, a child's BMI below 2 z score should alert GPs to possible malnutrition [1, 7].

Regarding GPs' use of the CPHB, this survey shows that a majority of GPs are accustomed to recording weight and height measurements. However, 25.7% of GPs do not systematically do it because they have already recorded them in their software, which means that they ignore the transmission role of the CPHB. Moreover, parents often forget the CPHB resulting in loss of information.

In France, GPs consider they have a key role in primary prevention but are more aware of secondary prevention [8]. The principal limiting factors they report are lack of time, tools, and training [4, 9, 10]. As already noted in previous

Table 1 Sociodemographic data and practices of general practitioners regarding measurement of body mass index (BMI+) or not (BMI-) at each medical consultation.

	BMI+ (n = 34)	BMI- (n = 68)	Total (n = 102)	p
Male gender	58.8	51.4	53.9	0.48
Age > 50 years	64.7	54.4	57.8	0.32
Paediatric population > 15%	47.0	30.9	36.3	0.10
Familiar with dietary recommendations	76.5	67.2	70.3	0.33
Familiar with nutritional blood tests analyse	39.4	28.1	31.9	0.26
Prescription of dietary supplements	26.5	7.3	9.8	0.008
Previous participation in training on child malnutrition	14.7	7.3	10.4	0.24
Request for training in child malnutrition	85.3	90.9	89.0	0.39
Review at growth charts	67.6	31.3	43.5	0.001
Recording of weight and height in child's personal healthcare book	85.3	76.1	79.2	0.38

surveys, most GPs are able and willing to give diet counselling [9], but as our study showed, few are able to do blood tests for nutritional status assessment, or to prescribe dietary supplements in children. However, the majority of GPs participating in this survey requested training on this subject.

Conclusion

GPs do not sufficiently measure height and BMI in children, despite the increasing availability of software. Failure to fill and analyse growth charts can induce delays in child malnutrition screening, and a loss of information between healthcare professionals. Efforts should be developed by public health authorities and paediatricians (e.g., training courses) to increase the awareness of GPs about nutrition and growth in children. The implementation in France of electronic health records should contribute to the standardisation of nutritional indicators and data transfers between healthcare professionals. Software requiring regular measurements of height and weight (e.g., two or four times a year) could promote these measurements, and it is hoped that the increasing grouping of GPs in care homes will enable them to have assistants to help them take height and weight measurements.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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