

Identifying and barriers to intervening in childhood obesity in paediatric outpatient nursing settings using a mixed methods study

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Abstract

Background: Obesity is an increasing problem in England and disproportionately affects those of lower socio-economic status, and there has been a drive for health care professionals at all levels to provide brief advice regarding weight management. There is little evidence on what barriers exist to providing this advice in paediatric settings.

Methods: A retrospective review of children's outpatient clinic notes in a hospital in London, UK during one week was undertaken to collate height and weight measurements and calculate (Body-Mass-Index) BMI centile. Qualitative interviews were conducted with staff to explore attitudes and opportunities to discuss weight

Results: Of children included (n=236) Two fifths (41.1%, n=97) had height and weight recorded. BMI centile was calculated for 79.4% of those (n=77). A quarter (26% [95% CI: 13-30%], n=20) were overweight (>91st centile) or obese (>98th centile). Nursing staff reported that the period taking height and weight measurements was not a good opportunity to raise the issue of weight, due to lack of time, lack of knowledge of patient's medical history and not having BMI centile available.

Conclusion: Over one in four children attending the paediatric clinic were overweight or obese. Nursing staff need support and training to feel confident to incorporate discussions around healthy weight into their role and to make the most of opportunities to make every contact count.

Background

Nearly a third of children aged 2-15 years in England are overweight or obese¹. Data from the National Child Measurement Programme (NCMP) shows this disproportionately affects children from socioeconomically deprived backgrounds and the prevalence of excess weight increases with age.² Tackling childhood obesity is a national priority which involves all health professionals taking a greater role in health promotion.³ The National Institute for Health and Care Excellence (NICE) guideline (CG189, 2014)⁴ recommends that health professionals take height and weight measurements and raise the issue of children's weight with families. There is positive evidence for the effectiveness of brief advice interventions with adults in primary care^{5 6}. There remains a lack of evidence on such brief advice interventions on children, and what barriers may exist for staff to implementing this guidance.

Children who are overweight are more likely to be overweight in adulthood and at greater risk of long-term health conditions. National policy encourages all health professionals to have a role in the prevention and early identification of overweight and obesity in children. However, there is a lack of evidence on brief advice interventions by paediatric healthcare staff and on the overall effectiveness of such interventions regarding child weight.

Screening for BMI and prevalence of being overweight in hospital patients has been explored in some US and European inpatient^{7 8} and outpatient settings⁹. These studies found that recording of BMI by staff and subsequent discussion about weight is poor. However, research with parents in the US found they believe their children should have their BMI screened and welcomed the opportunity to discuss their child's weight with a health professional.¹⁰ There is also some evidence on practices, attitudes and training needs of Australian primary care nurses surrounding child obesity prevention in the general practice setting.^{11 12}

In the UK, Gali et al.¹³ suggested that paediatricians are missing an opportunity in outpatient clinics to identify and intervene in children who are overweight. Their 2011 study reported that 25% of girls and 29% of boys were overweight or obese, but that 83% of overweight children were unrecognised as BMI was not routinely calculated, despite availability of height and weight data. Harvey et al.¹⁴ found that paediatricians in the West Midlands were poor at identifying overweight children and the authors stated that "*we cannot expect [parents] to prioritise their child's obesity if we [paediatricians] do not do the same*". However, the role of the paediatric nursing staff in the outpatient department setting in identification of obesity in children and offering advice about health weight and diet remains unexplored.

The aim of this study is to estimate the prevalence of excess weight in children attending the paediatric outpatient department in an acute trust, and to explore the opportunities, attitudes and barriers for nursing staff in raising the issue of weight and providing information on healthy lifestyle and support available to families.

Methods

Study setting: This study was conducted in the Royal Free London NHS Foundation Trust (RFL), a large teaching hospital in London which serves a diverse catchment area. The review was conducted between June and October 2017.

Study sample: All children attending routine outpatient paediatric appointments across all specialties, during a one week period (19th-23rd June 2017) were identified from routine hospital records. The interviews were carried out with 2 registered nurses, and 3 nursing assistants. The focus group consisted of 3 registered nurses.

Identification of height and weight data: Children attending outpatient paediatric clinics are seen by nursing staff prior to their medical appointment in a private area where height and weight measurements are taken and recorded on a clinical review form which is scanned and stored in the patient record. The following study data was extracted; appointment date; clinic type; appointment type; date of birth (DOB); gender; postcode; if height and weight was recorded; height (cm), weight (kg). The height and weight measurements were used to calculate BMI centile, using the UK-World Health Organisation growth charts for 2-18 year olds.¹⁵ Clinical thresholds defining overweight as BMI \geq 91st percentile and obesity as BMI \geq 98th percentile were used¹⁶. DOB was converted to age

at the time of appointment. Postcode was used to identify the Lower layer Super Output Area (LSOA), ward, and deprivation score and quintile of the patient's residential address. The data was analysed in Excel. This quantitative data was used to inform the interview guide and focus group facilitation.

Semi-structured interviews and Focus Group Discussion (FGD) with staff: Paediatric clinic nursing staff were asked to volunteer to be interviewed. Eight nursing and nursing assistant staff working in the outpatient clinic agreed to participate. Five 1:1 semi-structured interviews took place and one FGD with three nurses, opportunistically recruited from based on availability in the clinic, and did not receive compensation. Those that were not able to commit to interviews were asked to attend the focus group. The discussions were led by a by a public health registrar with Masters in Research Methods and in Public Health and previous experience in qualitative research, following the same topic guide for both interviews and the FGD (appendix 1), which covered staff roles, their experiences of discussing weight with families, and the barriers and opportunities to do this. Each interview/FGD was 15-20 minutes in length and took place a week after the data collection. Notes of the discussion were written up immediately after the interviews and a thematic analysis was completed by hand using open coding to identify themes. The following themes were identified: staff responsibilities; calculating BMI centile; timing and sensitivity; knowledge; and opportunities.

Results

Clinic data

Figure 1 describes the number of patients included in data collection (n=236). Complete height and weight information was available for only 97 patients (41.1% of total), and 20 patients under 2 years were excluded from BMI centile calculations. The remaining 77 had their Body Mass Index calculated.

Table 1 describes the demographic and appointment characteristics of patients. The median age was 6 years (IQR=8), and 55.5% were male. Children from all deprivation quintiles were present in the sample. Two thirds of children had been seen before in the clinic and 82% had an appointment with a hospital Consultant.

Table 1: Patient demographic and appointment characteristics

	All patients with notes available (n=236)		Height and weight recorded	
	n	%	n	%
Gender				
Male	131	55.5%	56	42.7%
Female	105	44.5%	41	39.0%
Age				
Under 2 years	38	16.1%	20	52.6%
2-5 years	51	21.6%	22	47.1%
6-9 years	31	13.1%	16	48.4%
10-13 years	68	28.8%	24	32.4%
14-17 years	48	20.3%	15	33.3%
Deprivation quintile				
1 (most deprived)	47	19.9%	19	40.4%
2	56	23.7%	26	46.4%
3	62	26.3%	22	35.5%
4	56	23.7%	27	48.2%
5 (least deprived)	15	6.4%	3	20.0%
Appointment type				
New appointment	78	33.1%	40	51.3%
Follow up appointment	158	66.9%	57	36.1%
Clinic type				
Medical ¹	101	42.8%	83	82.2%
Surgical ²	125	53.0%	8	6.4%
Other	10	4.2%	6	60.0%
Appointment type				
Doctor	193	81.8%	96	49.7%
Nurse	22	9.3%	0	0.0%
Orthoptist	20	8.5%	0	0.0%
Dietitian	1	0.4%	1	100.0%
TOTAL	236	100.0%	97	41.1%
Notes:				
¹ Allergy, Dermatology, Diabetes, Epilepsy, Gastroenterology, General Paediatrics, Rheumatology				
² ENT, Ophthalmology / orthoptics, Orthopaedics, Plastic surgery				
<5 patients per speciality = Cardiology, Dietetics, Endocrinology, Neurodisability				

Table 2 describes the 77 patients for whom BMI centile was retrospectively calculated and shows that 26.0% of children were above the 91st centile (n=20, 95% CI: 13.1 – 29.8%). Over a third of girls (n=11, 35.5%) aged 2-17 years were overweight or obese compared to 19.5% (n=9) of boys. Over half (53.3%, n=8) of patients aged 14-17 were overweight or obese. There was no clear pattern in the prevalence of excess weight by deprivation in this dataset, but the study was not powered for this analysis (Table 2).

Table 2: BMI centile categorisation

	Under weight ¹		Healthy weight ¹		Over weight ¹		Obese ¹		Total	
	n	%	n	%	n	%	n	%	n	%
Gender										
Male	2	4.4%	35	76.1%	5	10.8%	4	8.7%	46	100.0%
Female	0	0.0%	20	64.5%	5	16.1%	6	19.4%	31	100.0%
Age										
2-5	0	0.0%	19	86.4%	1	4.5%	2	9.1%	22	100.0%
6-9	1	6.3%	15	93.8%	0	0.0%	0	0.0%	16	100.0%
10-13	1	4.2%	14	58.3%	3	12.5%	6	25.0%	24	100.0%
14-17	0	0.0%	7	46.7%	6	40.0%	2	13.3%	15	100.0%
Deprivation quintile										
1 (most deprived)	0	0.0%	10	83.3%	0	0.0%	2	16.7%	12	100.0%
2	2	8.7%	14	60.9%	3	13.0%	4	17.4%	23	100.0%
3	0	0.0%	13	72.2%	5	27.8%	0	0.0%	18	100.0%
4	0	0.0%	16	76.2%	1	4.8%	4	19.0%	21	100.0%
5 (least deprived)	0	0.0%	2	66.7%	1	33.3%	0	0.0%	3	100.0%
TOTAL	2	2.6%	55	71.4%	10	13.0%	10	13.0%	77	100.0%

Notes:

¹ Underweight <2nd centile, Healthy weight = 2nd-91st centile, Overweight >91st centile, Obese >98th centile using UK-World Health Organisation growth charts for 2-18 year olds

Clinic staff interviews

Roles and responsibilities

Staff viewed height and weight measurements as more important to check growth and for calculating weight-based doses of medication, rather than as a trigger to initiate conversations about healthy weight. They did not see it as part of their role to proactively raise the issue of healthy weight, unless they were instructed to and had received training.

Doctors were identified by the nursing staff as having more time, plus greater knowledge of the clinical history of the patient and therefore best placed to discuss healthy weight. Nurses felt that patients with weight issues should already be under the care of another healthcare professional in the community, and therefore, it was not their role to discuss this with the family.

Nursing staff reported that they inform parents of height and weight measurements for their child, but do not offer information on what this means (e.g. BMI centile, as this is not calculated) and would not be confident to raise the issue of weight proactively.

Participants stated that some parents with young children and babies will ask about the measurements that they have taken. The nurses felt more comfortable responding to this, than having to raise the issue of weight themselves, but it was not without its challenges, and they gave limited information or advice if the child is overweight. One nurse also indicated that she felt more comfortable raising the issue of a child being underweight, than overweight.

Timing and sensitivity

The nurses interviewed did not view the time of taking a child's height and weight measurements as an optimal opportunity to have a discussion with families about weight. Weight is viewed as a 'sensitive' issue, and therefore sufficient time is needed to have a proper conversation about it. One nurse commented that *"if it's not done right, then the message is lost and you have to treat it like a 'lost customer'".*

Another concern for the staff was that they did not know the medical or social history of the patient, and discussing weight could be inappropriate in the context of other treatment or support being received.

Knowledge

The staff felt that they had enough knowledge about healthy eating, physical activity and the risks associated of being overweight in childhood. This was mostly gained from personal experience or conversations with colleagues rather than formal training. Knowledge of local services and places to signpost families was however very limited. Participants suggested that having a leaflet and *"a nice easy sentence, so that if the parent brings it up, then we have some information that we give and some advice"* would be beneficial.

Opportunities

Outpatient wound dressing appointments were identified as potential opportunities to have conversations about weight, as relatively unpressured environment with time to open the discussion. One participant described observing a child's teeth as being in poor condition during a dressing appointment and used this as an opportunity to ask about diet, which led into a conversation about healthy eating and weight, and they mentioned that healthy eating links well to wound healing advice.

Some nurses suggested that it would be easier to have conversations about weight with inpatients on the ward, since there is the opportunity to have a longer conversation, build up rapport with the family

Discussion

Main finding of this study

It was found that there was a low uptake of height and weight screening in the paediatric outpatient clinic and it is not routine for outpatient clinic nursing staff to discuss weight during the taking of height and weight measurements prior to being seen by the doctors in clinic. Of the 236 paediatric patients included in the study, just under half (41.1%) of children had height and weight recorded at the time of outpatient attendance despite the impact of weight on children's current and future health. BMI centile was also not routinely calculated by staff in the clinic, but calculations for this study found that over a quarter of children (26.0%) were overweight or obese. This is similar to the prevalence in the local community, which shows that 21% of age 4-5 year olds and 39.0% of age 10-11 year olds are overweight or obese,¹⁷ which is similar to the finding in this study (26.0%). However, our data showed that 53% of older paediatric patients (age 14-17 yrs) were overweight or obese (n=8), this backs up local GP data and NCMP data also indicate that the prevalence of excess weight increases with age.¹⁸ This study supports the findings of other studies investigating identification and discussion of child weight in paediatrics demonstrating that children are not identified as being overweight or obese and limited advice and support is provided.^{11,12}

Interviews with nursing staff identified that there are a number of barriers to doing this and providing opportunistic advice about weight and lifestyle to families. These included lack of time, lack of clinical information e.g. clinical history or BMI centile, lack of confidence in raising the issue of a child's weight with parents and not seeing this as part of routine care or their job role. Staff viewed height and weight measurements as important to check growth and for calculating weight-based doses of medication, as opposed to an opportunity to identify overweight and obese children and talking to parents or carers about this. There was a lack of clarity over the role of acute trust staff in this area. Nurses believed that obese children should already be under the care of a community-based healthcare team who would be managing this issue.

What this study adds

This study highlights two key themes; firstly the potential role afforded to acute trusts to identify and discuss children's weight with parents or care givers; over one in four children attending the outpatients paediatric clinic were overweight or obese and secondly, despite this height and weight is not always measured and BMI not routinely calculated.

There were over 10 million hospital outpatient appointments with children aged 0-18 in 2016/17 in England¹⁹, which represent a huge opportunity to influence lifestyle behaviours. In order to reduce future demand on secondary care services caused by obesity related conditions, hospitals, along with partners in primary care and the community, have a role to play in obesity prevention. Our study showed that it is not routine for outpatient clinic nursing staff to discuss weight during the taking of height and weight measurements prior to being seen by the doctors in clinic.

Interviews with nursing staff identified that there are a number of barriers to providing opportunistic advice about weight and lifestyle to families. These included lack of time, lack of clinical information e.g. clinical history or BMI centile, lack of confidence in raising the issue of a child's weight with parents and not seeing this as part of routine care or their job role.

Limitations of this study

Potential limitations of this study are that activity at the children's outpatient clinic was only captured for one week. If the review period were longer it would be more representative and a larger dataset would be available. Staff practices were also likely to be consistent over different time periods. Furthermore, height and weight measurements were only available for half of the children who attended in the review week, and this could have led to an over estimation of the prevalence of overweight and obesity, if for example, staff only weighed those children they perceived as overweight. There was also insufficient data collected to analyse other possible explanations for these missing measurements, such as experience or confidence of staff, or parental and child attitudes. In particular, surgical clinics had a very low measurement rate, but it was not possible to ascertain the specific reason for this.

A further limitation of the measurements are that these are only single clinic measurements, and a series of measurements during child growth would allow trends to be analysed and a more accurate picture to be described. Some other demographic information (such as ethnicity) was also not collected, meaning associations between these and weight could not be examined. Clinical thresholds (91st and 98th centile) were also used instead of population thresholds for calculating overweight and obesity (85th and 95th centiles). The study could have been improved by also speaking to consultants to understand their approach to child weight.

Another issue that needs to be addressed in future work is the parental perspective. Evidence has shown that parents often do not recognise their children as being overweight or obese^{20 21} and do not always understand or recall information from height and weight screening, even when it is delivered and discussed with them.²² The provision of feedback through the NCMP has been shown to encourage some parents to seek help without causing unfavourable effects; however the impact on behaviour change was limited.

The wider hospital environment must be conducive to positive health behaviours. Trusts in England have recently been encouraged to consider the role that the hospital as an organisation, employer and setting has in supporting healthy lifestyles, through Making Every Contact Count and Commissioning for Quality and Innovation (CQUIN) and a cultural shift to prevention being a facet of a hospital in which all health professions are involved.

However, there must also be a consideration for the potential harms of, what is effectively, screening of BMI centile in paediatric patients. Previous research has identified the potential for harm via increased stigmatisation, lowered self-esteem, body dissatisfaction and disordered eating,²³ but a systematic review found these are rarely evaluated or considered in obesity screening programs.²⁴

Furthermore, if a high BMI centile is measured but not discussed or acted upon, either due to the health professional's lack of training or knowledge, or due to a lack of resources or access to interventions, this may give false reassurances to the parent and child and constitute a form of institutional neglect. Therefore, if BMI centile is routinely collected, it is imperative that adequate staff training and resources are available to cover the expected increase in uptake of weight management interventions.

Variations in the services commissioned by local authorities can make it challenging for staff to know what support is available. However, national campaigns such as Change4Life provide resources and apps which all health professionals can direct families to. Guidance and training is also available for healthcare professionals on how to raise issues of weight with families in health care settings, e.g. Making Every Contact Count and 'Let's talk about weight'.²⁵ Further research is needed to provide evidence on the effectiveness of these brief interventions with families in different healthcare settings.

Conclusion

It was found that the prevalence of overweight and obese children attending a general paediatric outpatient department was comparable to the prevalence in the wider community yet height and weight was only measured in two fifths of children seen and staff reported barriers including a lack of training to be able to discuss healthy weight with parents at the time of their appointment. This highlights the need for interventions to be developed for hospitals, as well as community and primary care settings, to screen for and discuss children's weight with parents, in order to promote positive behaviour change in families at every health care contact. This could include developing systems to ensure that BMI centile is routinely calculated and recorded for all children in the outpatient hospital setting, and training and support for staff provided as part of mandatory training to empower and educate them to have conversations with families about weight. In addition a cultural shift within paediatrics clinics, at all levels of staff, from student to consultant, will need to be implemented to ensure staff have the confidence and time to bring up paediatric obesity as an important issue in consultations.

Declarations

Ethics approval and consent to participate: Approval to collect the data was obtained from the RFL audit department as part of a service improvement initiative. The project was reviewed and ethically approved by internal Royal Free London governance structures including the clinical audit lead.

Consent for publication: Not applicable

Availability of data and materials: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests: None

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Author contributions: NE conducted the interviews, collected the data and wrote the first draft. AB supervised the project and contributed to the first draft and revisions. AA reviewed the manuscript and revised the first draft. MC assisted in the design of the study, and data collection and analysis. RM assisted in the interviews and the data collection. AR supervised the project and contributed to the first draft and revisions.

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Figures

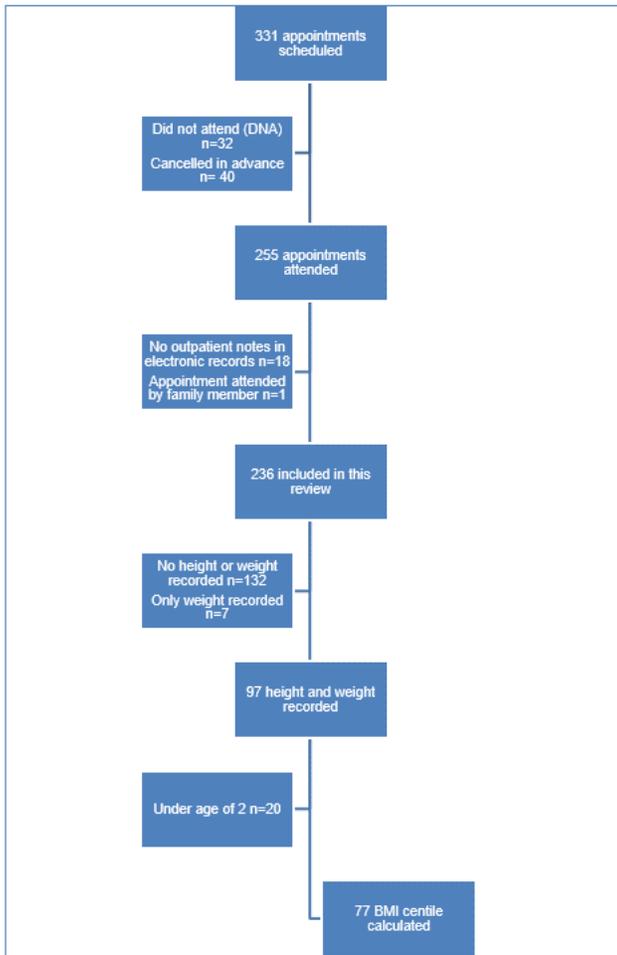


Figure 1

Patient flow diagram

"It is not our job to calculate BMI or provide information to families about their weight." Registered nurse

"But it is everybody's job to say something, it's our job, it's everybody's job... If I was trained and permitted to I would talk to families about weight." Nursing assistant

"Given the right training, then yes we should be able to raise the issue of weight with families." Registered nurse

"It is easier for a doctor to speak to the family about it, as I'm just checking their height and weight." Nursing assistant

Figure 2

Roles and responsibilities

"I wouldn't ever tell the parents that their child is overweight, I just do their height and weight and if they say anything then I follow up on this." Nursing assistant

"Sometimes parents will ask us after we've done the height and weight, 'do you think that she's ok for her age?' – I have to guess because I can't calculate the BMI centile, it's just done by observation." Registered nurse

"I wouldn't really say anything unless they raise it or say something after I tell them about height and weight.....if they say 'oh, they've lost weight', for example, then I might use that as an opportunity to start a conversation about how it's going, and I say oh you know it isn't easy, and we talk about healthy eating etc..." Registered nurse

"I know that I should, but [raising the issue of weight] feels difficult to do" Registered nurse

"If I feel that the child may be underweight or overweight I might say something like 'do you think she's a bit small?'....I have seen overweight children but I find it harder to have that conversation" Registered nurse

Figure 3

Providing feedback to families

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendix.docx](#)