

An Audit study of Weight and Height monitoring in young people on Methylphenidate attending a National Child and Adolescent Mental Health Community Clinic (CYPS)

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Background

Attention deficit hyperactivity disorder is one of the neurodevelopmental disorders often seen in young people. The core symptoms include inattention, hyperactivity and impulsivity. NICE guidelines recommend different treatments for ADHD and the first line pharmacological treatment advised is Methylphenidate. Regular monitoring of weight and height is advised by NICE guidelines for young people on Methylphenidate, as it may cause weight loss and growth retardation. The aim of this audit was to assess compliance with NICE guidelines regarding height and weight monitoring in young individuals attending a National Child and Adolescent Mental Health Community Clinic and receiving methylphenidate treatment.

Method

Retrospective case note analysis was carried out on a sample of 287 young people actively attending the National Child and Adolescent Mental Health Community Clinic. Analysis was focused on determining whether weight and height were being monitored according to guidelines. Factors contributing to inadequate monitoring were identified and the presence of comorbid mental disorders were also noted. Additional data, such as demographics and type of methylphenidate treatments, were also recorded.

Results

Results revealed that weight was monitored according to guidelines in 31.36% whilst weight was monitored in 25.09% of cases. Height and weight were both adequately monitored in 25.09% of the sample. Reasons for under reporting of weight and height and the frequency of other comorbid disorders were also identified.

Conclusion

This audit highlights the need for improved weight and height monitoring of young people on methylphenidate. Different strategies can be implemented to facilitate adherence to monitoring guidelines and ensure the availability of accurate data for healthcare professionals involved in patient follow-up.

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Attention-deficit hyperactivity disorder (ADHD) is a relatively common neurodevelopmental disorder often diagnosed in young people (YP). The prevalence of ADHD among YP has been increasing, with a worldwide-pooled prevalence of 5.29%.¹ The three symptom groups in ADHD are inattention, hyperactivity and impulsivity. For a diagnosis of ADHD to be made, these symptoms must be persistently present in more than one situation/environment and for over a period of 6 months, and must have an impact on the individual's academic, occupational, or social functioning.² It has been estimated that 60-100% of children possess another comorbid disorder that often continues into adulthood, such as learning disorders, autism spectrum disorder (ASD), tic disorders, oppositional defiant disorder (ODD), conduct disorder and mood disorders.³

Treatment for YP with ADHD involves behavioural therapies (such as parent training programs) and medications for children who are over the age of 5 years.⁴ The first line medical treatment for ADHD in children is methylphenidate, which is a stimulant of the central nervous system (CNS) and acts on dopamine transporters (DAT) and norepinephrine transporters (NET), inhibiting synaptic reuptake of dopamine and norepinephrine.⁵ The increased availability of dopamine and norepinephrine in the dorsolateral prefrontal cortex helps improve attention and concentration, whilst an increase in these neurotransmitters in the basal ganglia and medial prefrontal cortex will improve hyperactivity and fatigue respectively.⁶ Methylphenidate can be associated with adverse effects, such as growth suppression due to a decrease in appetite⁷ and insomnia.⁸

Previous research has reported conflicting results on the effects of methylphenidate on the weight and height in children. Methylphenidate was found to have long term effects on growth in YP but slight growth differences were found to attenuate over time.⁸ However, other studies have reported clinically significant decreases in weight and height in YP on methylphenidate, especially if prescribed before the age of 12 years, in females⁹ and if higher doses were prescribed.^{10,11} Conversely, other studies have shown that CNS stimulants are not associated with significant losses in adult weight or height.^{12,13}

This audit study aimed to assess the current service offered to YP with ADHD within the Malta national child and adolescent mental health (CAMH) community service by comparing the height and weight monitoring of YP with ADHD with standardised monitoring recommendations.⁴

MATERIALS AND METHODS

Participants

The full list (n = 487) of active cases currently attending the Child and Young People Services (CYPS), a national child and adolescent mental health community clinic, was acquired. Through retrospective case note analysis, complete data was only available for a sample of 287 YP. The inclusion criteria included: 1) YP having a formal diagnosis of ADHD with or without other comorbidities, 2) YP taking methylphenidate (immediate-release or extended-release preparation), 3) YP from 4 to 17 years of age, 4) YP actively attending at CYPS. The diagnosis was made by a psychiatrist/psychologist within the national health service or the private sector.

Data Collection

Retrospective case note analysis between March 2021 and March 2022 was carried out to check whether height and weight monitoring was done according to NICE guidelines. For patients with missing data, a reason for those missing data was obtained from the case notes. Demographic data were recorded. The data obtained were inputted into a password-protected database within an encrypted computer.

Guideline

The guideline used for comparison was the NICE guideline NG87, (1.8.5): Attention deficit hyperactivity disorder: diagnosis and management (Maintenance and monitoring). This guideline recommends that all YP on methylphenidate who are 10 years or younger should have their height monitored every 6 months, and weight monitored every 3 months (every 6 months for YP older than 10 years of age). The data obtained should be plotted on a growth chart for comparison.⁴

ETHICAL INFORMATION

Research governance approval was obtained from the Data Protection Officer of the Malta Mental Health Services (Government of Malta) on the 14th of December 2020. Approval from the Chairman of the Department of Psychiatry (Malta Mental Health Services, Government of Malta) was obtained on the 17th November 2020.

RESULTS

From the total sample (n = 287), 211 (73.52%) were older than 10 years of age whilst 76 (26.48%) were 10 years or younger. Furthermore, 230 individuals (80.14%) were male and 57 individuals (19.86%) were female.

The sample also included 141 patients who were on immediate-release preparation, 105 patients on the extended-release preparation and 41 patients who were taking both preparations of methylphenidate.

31.36% (n = 90) of the patients within the sample had their height monitored according to guidelines, whilst 25.09% (n = 72) had their weight monitored within the specified timeframes of the guideline (NG87). All individuals who had their weight monitored also had their height correctly recorded, thus 25.09% (n=72) had both their weight and height monitored according to guideline. This meant that height and weight monitoring was not carried out as per the NICE guideline in 68.64% (n =197) and 74.91% (n = 215) of patients respectively.

Reasons for underreporting of weight and height according to NICE guidelines included : 1) No-show appointment/appointment cancelled by patient or parents (39.53%, n = 85), 2) appointment postponed due to COVID pandemic administrative issues (13.95%, n = 30), 3) appointments scheduled for after the specified height/weight monitoring timeframe (12.56%, n = 27), 4) appointment by teleconsultation (10.70%, n = 23), 5) failure of weight/height monitoring during the appointment (9.77%, n = 21), and 6) patient attended the appointment and parameters were taken not concordant with guideline (7.91%, n = 17) (Table 1).

Comorbid conditions included ODD and conduct disorder (10.45%, n=30), ASD (8.36% , n=24), learning disabilities (2.79%, n=8), epilepsy (1.05%, n=3) and mood disorders (0.70%, n=2). 76.7% (n = 220) of the sample had no other co-existing mental disorder (Table 2).

DISCUSSION

Overall, this study highlights the need for improved height and weight monitoring in YP with ADHD taking

methylphenidate and attending a Malta national CAMH community clinic. This is suggested to meet the recommended standard.⁴ Height monitoring was recorded in 31.36% of the sample whilst weight monitoring was recorded in 25.09% of the sample. The better monitoring noted for height when compared to weight monitoring may be explained by the greater likelihood of being given an appointment within a 6-month timeframe (rather than a 3-month timeframe), as suggested by NICE. Previous research has been equivocal; some reported low levels of monitoring.¹⁴, while others reported adequate levels of monitoring of physical parameters.¹⁵ Inadequate monitoring happened mostly due to appointments being cancelled by the patient (39.53%) or the clinic due to the COVID-19 pandemic period (13.95%). Mirroring previous research ¹⁶, it was difficult to arrange adequate physical monitoring in YP with ADHD during the peak of the pandemic due to a reduction in face-to-face appointments.

17.68% of patients (n = 38) who attended the clinic within the 3-month/6-month timeframe still did not have the recommended physical monitoring carried out. While acknowledging the need for service improvement, staff burnout and shortage of staff might be a cause. This would be in line with previous research on burnout in mental health services.¹⁷

Our sample of YP with ADHD consisted of a larger proportion of males (80.14%) than females (19.86%) which complemented gender prevalence ratios reported in previous research.¹⁸ Our study sample also included a larger proportion of YP over the age of 10 years (73.524%) who were on methylphenidate, indicating that older children were more likely to require pharmacological treatment (for schoolwork, exams and overall functioning) than younger patients.

The most common co-morbid mental disorder with ADHD present in this sample of YP were ODD or conduct disorder (10.45%) followed by ASD (8.36%).

Table 1 Reasons for underreporting of weight and height in case notes

No-show/Cancelled by patient	39.53% (n= 85)
Postponed due to COVID pandemic period	13.95% (n=30)
Appointments scheduled after specified timeframe	12.56% (n=27)
Appointments by teleconsultation	10.70% (n=23)
Attended but weight/height monitoring not done	9.77% (n=21)
Attended but weight/height monitoring not done as per guidelines	7.91% (n=17)
Other	5.58% (n=12)

Table 2 Comorbid mental disorders noted in case notes

Coexisting Mental Disorder	Frequency	Percentage
None	220	76.65 %
Autism Spectrum Disorder	24	8.36 %
ODD/CD	30	10.45 %
Mood disorders	2	0.70 %
Learning disability	8	2.79 %
Epilepsy	3	1.05%

These findings mirror previous research, where ODD and ASD were reported to be common comorbidities with ADHD.^{19–21} Furthermore, ADHD was the most common comorbidity present in ASD with rates of 40–70%.^{21–23} This study has audited the national child and adolescent mental health service offered to YP with ADHD, excluding patients who are being seen in private clinics. Therefore, this might have introduced an element of selection bias, possibly affecting the generalisability of the results. However, this limitation might have been mitigated since a big proportion of YP with ADHD are seen at CYPS, which is the only national community CAMH service.

The COVID-19 pandemic might have also negatively skewed the results obtained due to the disruption in appointments. This was listed in the results as a main reason for underreporting of height and weight monitoring.

CONCLUSION

This audit highlights the need for improved physical monitoring (height and weight) for YP with ADHD who attend CYPS and are on methylphenidate. The authors recommend sessions with CAMH service professionals to encourage standardised physical monitoring as suggested by NICE guideline NG87. When appointments are given beyond the recommended timeframe, the parents should be instructed to monitor any changes in height and weight themselves or by visiting the health centre; the information can then be sent to CYPS for documentation. Electronic databases for growth charts are also recommended to centralise patient data, ensure data storage reliability, and for better access of data. The authors also recommend a second audit cycle once the above changes are implemented to ensure an improvement in physical monitoring of ADHD patients attending the Malta national community CAMH service.

SUMMARY BOX

- Attention deficit disorder is a neurodevelopmental disorder commonly diagnosed in young people attending CYPS.
- Methylphenidate is the first line pharmacological treatment for this condition recommended by NICE guidelines.
- Young people on methylphenidate require regular monitoring as recommended by NICE guidelines.
- This study was carried out on a sample of 287 young people who were actively attending CYPS during the specified time frame and were on Methylphenidate.
- It was noted that weight was monitored in 25% whilst height was monitored in 31% of the sample.
- Reasons for underreporting of these parameters and comorbid conditions were also explored.

ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity disorder
YP	Young People
ASD	Autism Spectrum disorder
ODD	Oppositional Defiant disorder
CNS	Central Nervous System
DAT	Dopamine transporter
NET	Norepinephrine transporter

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