

Early childhood practitioners' awareness of gross motor milestone acquisition and movement guidelines

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Background: Early childhood development (ECD) practitioners are essential in governing foundational aspects, such as gross motor development and participation in physical movement.

Aim: This study aimed to determine ECD practitioners in Vanderbijlpark's awareness of gross motor milestone acquisition and movement guidelines for children birth to 4 years. Associations between these ECD practitioners' demographic aspects and their determined awareness were also explored.

Setting: This study included 50 ECD practitioners (M = 36.9 years) from nine ECD Centres (ECDs) in Vanderbijlpark, South Africa.

Methods: A descriptive quantitative, cross-sectional design was followed. Data was collected using a self-administered questionnaire. Data analysis included descriptive statistics and associations between practitioners' demographic aspects and their awareness of gross motor milestone acquisition and movement guidelines.

Results: Correct awareness of gross motor milestone acquisition was mainly observed for milestones acquired during the first year of life. Participants' awareness of screen time guidelines was relatively good, while their awareness of movement and sleep guidelines was poor. Having children, as well as the age of these children, respectively, correlated significantly with practitioners' knowledge of standing alone ($p = 0.007$) and jumping 2 feet ($p = 0.046$). Participants' work experience or training was not significantly associated with their determined awareness.

Conclusion: The sample of ECD practitioners in Vanderbijlpark, South Africa, did not have adequate awareness of gross motor milestones and recommended movement guidelines for children birth to 4 years.

Contribution: Limited awareness of gross motor milestone acquisition and movement guidelines amongst ECD practitioners' warrants development of knowledge through ECD-related training, CPD opportunities, and short courses.

Keywords: early childhood development (ECD); ECD practitioner; ECD centre; gross motor milestones; movement guidelines.

Introduction

Early childhood represents a sensitive period for brain development and forms the foundation for future learning success (Department of Social Development 2015; Smit et al. 2021). Early childhood can be defined as the period from prenatal development until 8 years of age (Irwin, Siddiqi & Hertzman 2007). However, in the South African school context, early childhood is viewed as children from birth to 4 years or until they enter the formal school setting in Grade RR or R at the age of 5 (Department of Basic Education 2009). The early childhood years provide ample opportunity for optimal development, and significant benefits can accrue from effective stimulation and intervention (Burger 2012; Smit et al. 2021). Conversely, brain development during these years is susceptible to outside influences and adverse experiences such as malnutrition, stress, environmental exposures, and a lack of play and stimulation (Burger 2012; Pierce 2021; Smit et al. 2021; Van Zyl & Van Wyk 2021). Research in developmental psychology, neurobiology, and education indicates that education during the early childhood years is critical to children's future life successes and that no other period has a more significant developmental impact than these early years (Burger 2012; Lu & Montague 2016). Education during the early childhood years impacts all aspects of growth and development,

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including cognitive, emotional, social, physical, and moral aspects (Department of Basic Education 2009; Department of Social Development 2015; Lu & Montague 2016).

Young children spend a lot of time at early childhood developmental centres (ECDCs) (Wilke et al. 2013). Thus, parents often rely on ECDCs to expose their children to sufficient physical activity opportunities for health benefits (Lu & Montague 2016). Currently, around 1 660 317 children are enrolled in the 42 420 South African ECD programmes counted during the ECD census in 2021 (Department of Basic Education 2022). The number of young children spending time in the ECD environment highlights the essential educational role ECD practitioners play in their development (Martyniuk & Tucker 2014), by limiting sedentary behaviour, developing good sleeping habits, and engaging children in physical activity (Chen et al. 2021). Children's movement behaviours are thus likely to be influenced by their ECD practitioner (Chen et al. 2021).

Movement behaviours in young children include motor development, physical activity, sedentary behaviour, and sleep (Cech & Martin 2012; Chen et al. 2021). Sound motor development depends on timely attainment of gross motor milestones, allowing children to gain independent movement to explore and learn from their environment (Gerber, Wilks & Erdie-Lalena 2010). Developmental milestones are the standards for age of skill development (Sabanathan, Wills & Gladstone 2015; Tecklin 2015) and can be used to assess adequate motor skill development during early childhood (Gerber et al. 2010). Developmental milestones occur in stages (Tecklin 2015) and contribute to children's holistic development (Gupta et al. 2016; Tecklin 2015). Furthermore, motor development forms the building blocks for locomotor, object manipulation, and stability skills and continues to develop and refine to improve components such as balance, coordination, speed, strength, and bilateral integration (Gerber et al. 2010; Goodway, Ozmun & Gallahue 2019; Hulteen et al. 2018; Tomaz et al. 2019; Veldman et al. 2019).

A reciprocal relationship between motor skills and physical activity exists, indicating that motor skill development is often cultivated through sufficient and versatile movement, such as physical activity and active play (Loprinzi et al. 2012; Matarma et al. 2018; Wilke et al. 2013). Therefore, physical movement is a prerequisite for developing specific motor skills (Loprinzi et al. 2012). Consequently, children with inadequate motor skills or developmental delays may be less likely to participate in physical activity (Loprinzi et al. 2012; Robinson 2011; Wouters, Evenhuis & Hilgenkamp 2019). Furthermore, regular participation in physical activity is not only linked with motor skill development but also with improvements in physiological, psychological, social, and cognitive development (Brouwer, Stolk & Corpeleijn 2019; Carson et al. 2017; Copeland, Houry & Kalkwarf 2016; Martyniuk & Tucker 2014; Schmutz et al. 2018; Wolfenden et al. 2019).

Given the importance of movement through physical activity and active play, South Africa compiled 24-h

movement guidelines for children from birth to 5 years. These guidelines are aligned with the World Health Organization's (WHO) physical activity guidelines for children under 5 (Chen et al. 2021; Draper et al. 2020; WHO 2019). Although the ECDC environment is an ideal setting for physical activity stimulation, children in ECDCs often exhibit low physical activity levels (Martyniuk & Tucker 2014). In 2021 the Thrive by Five Index reported that more than half (51.7%) of South African children between 4 and 5 years of age are not at par with regard to their motor development (Giese et al. 2022). Observation-based studies in rural and urban settings in South Africa reported that teacher-led gross motor activities made up as little as 6% of time in the urban and 13.9% in the rural ECD setting (Jones, Hendricks & Draper 2014; Tomaz 2018). Higher quintile ECD programmes reportedly allow more free play time as part of the daily programme, compared with lower quintile ECD programmes in South Africa (Department of Basic Education 2022). The South African ECD census concluded that 45% of children spent 30 min or less on free play outside, while 44% spent up to an hour and the remaining more than an hour (Department of Basic Education 2022). In South Africa, 48% of ECD programmes fall into lower quintiles 1 and 2, 28% are categorised as quintile 3, while a quarter falls into the two highest quintiles 4 and 5 (Department of Basic Education 2022). Of these, 59% are in urban areas, and 41% are in rural areas (Department of Basic Education 2022). Resources at ECDCs in South Africa also seem to be limited, thus indirectly restraining young children's movement opportunities. Only about half of all ECDCs in South Africa have access to materials typically used during movement or physical activities. In addition, 10% do not have an outdoor area, 15% have no outdoor play equipment, and of those who have equipment, only 32% of the equipment was reported to be of good quality (Department of Basic Education 2022).

Another limiting factor is the qualification level of ECD practitioners in South Africa, with most being underqualified (Smit et al. 2021). A South African national audit completed in 2014 revealed alarming statistics indicating that more than 40% of ECD practitioners did not complete high school, and roughly 70% did not have any specialised training in working with children (Department of Social Development 2014). However, the latest ECD census in South Africa indicates that 52% of ECD practitioners had a relevant qualification and 27% only participated in an accredited skills programme, while 21% do not have any relevant ECD qualification (Department of Basic Education 2022). If ECD practitioners lack knowledge of milestone attainment and the importance of physical movement, their interaction with children could be inadequate, and they may fail to identify developmental delays (Ebrahim, Seleti & Dawes 2013; Smit et al. 2021). Two recent studies in South Africa found that ECD practitioners' most commonly reported need was training and knowledge regarding physical activity and developmental milestones (Draper et al. 2017; Smit et al. 2021).

Gaining insight into ECD practitioners' awareness of young children's motor milestone acquisition and movement guidelines can inform ECD practitioners' future training to ensure adherence to movement guidelines and equip them to prevent and identify developmental delays (Department of Social Development 2015; Smit et al. 2021). Given the important role ECD practitioners play in moulding children's early learning outcomes through adequate exposure to physical movement and adherence to movement guidelines (Martyniuk & Tucker 2014; Smit et al. 2021; Wilke et al. 2013), the following aims were set. Firstly, to explore ECD practitioners' awareness of gross motor milestones acquisition and the recommended movement guidelines in children from birth to 4 years old. Secondly, to determine associations between practitioners' awareness and their demographic aspects.

Methodology

Participants and recruitment

This study was conducted using a descriptive quantitative, cross-sectional research design. After receiving a list of government-registered ECDCs in Vanderbijlpark from the South African Department of Social Development, all 15 were approached, and nine ECDCs consented to participation. According to the Department of Basic Education (2022), all ECDCs in South Africa should be registered with the South African Department of Social Development. Being registered infers compliance with national norms and standards to operate an ECDC legally.

Early childhood development practitioners were included in the study if they were employed (full-time or on contract) by a government-registered ECDC in Vanderbijlpark and if they were involved in ECD care for children between birth and 4 years old. A total of 50 female ECD practitioners with a mean age of 36.9 years (minimum 21.3 years; maximum 59.9 years) and an average work experience of 7.86 years (minimum 1 year; maximum 36 years), were included. Most participants (52%) completed Grade 12 (matric), while 18% had Grade 9 as the highest school-level qualification. In addition, 28% of participants attained diplomas, while only 2% had tertiary degrees. Of the 50 participants, 29 (58%) have attended additional short courses or continuing professional development (CPD) opportunities in the past.

Procedure

Data were collected by trained researchers using a self-developed questionnaire. As the questionnaire was not standardised, a pilot study was conducted to determine its functionality and comprehensibility. Five ECD practitioners in Vanderbijlpark completed the pilot questionnaire, after which minor changes were made for clarification. The data from these five questionnaires did not form part of the primary data set, while the updated version of the questionnaire was used in the main study.

After participants gave informed consent, the questionnaire was explained to them. The questionnaire took approximately 20 min to complete. The questionnaires were completed in a quiet room at each ECDC provided by the ECDC principal. The researcher was available to explain and elaborate on the questions within the questionnaire and answered queries while participants completed the questionnaire. The questionnaire and all documents were available in English, Afrikaans, and Setswana. When questions were asked or needed to be answered in Setswana, a competent individual within the ECDC acted as a translator. Participants were not allowed to communicate with each other while they completed the questionnaire. Where participants within an ECDC could not complete the questionnaire simultaneously, they were asked not to inform other participants of the questions. Participants were not allowed to access their mobile phones, laptops, desktop computers, or the internet during the completion of the questionnaire. These procedures were adhered to throughout the study to minimise errors and ensure high-quality data collection.

Measuring instruments

The self-developed questionnaire consisted of three sections. Section A of the questionnaire considered the demographic and background information of participants. Questions on age, gender, ECD qualification(s), children of their own, years of ECD work experience, contact with parents, and additional training through CPD, were posed.

Section B of the questionnaire investigated participants' gross motor milestone acquisition awareness. Participants were asked to provide their opinion of the ages at which certain milestones should be attained. These milestones include neck control, rolling, sitting with and without support, crawling on hands and knees, standing with and without assistance, walking with and without assistance, running, walking upstairs and downstairs, jumping on two feet, walking on tiptoes, walking forward on a line, standing on one foot, standing on tiptoes, kicking a ball, throwing a ball and catching a ball. All the milestones were explained through verbal and written instructions and a visual illustration, as described in the *Peabody Developmental Motor Scales, 2nd edition* (Folio & Fewell 2000). Participants were also asked to indicate the importance of children attaining gross motor milestones in this section.

Lastly, Section C of the questionnaire examined ECD practitioners' awareness of movement guidelines on screen time, physical activity, and sleep. The section also enquired into how children spent their time during a typical full school day at the ECD centre where the participants worked and contained questions on the importance of movement guidelines in general.

The complete ECD practitioners' questionnaire and the resources used to compile it is available from the corresponding author upon request.

Data analysis

The collected data were coded, transcribed into an Excel spreadsheet and imported into a SAS data set, whereafter, a biostatistician conducted the statistical analysis.

Quantitative variables were summarised using descriptive statistics (mean, SD, minimum, Q1, median, Q3, maximum), while frequencies and percentages were used to summarise categorical data. Associations for own children (yes or no) were evaluated using Fisher's exact test. Associations for qualification, work experience, and age of the youngest child were evaluated using the Cochran-Mantel-Haenszel (correlation) chi-square test. A *p*-value of less than 0.05 indicated statistical significance. When a binary variable had fewer than 10 participants for one of the two response categories, associations with that variable were not evaluated because of the small effective sample size (SAS Institute Inc. 2017).

Ethical considerations

Ethical clearance to conduct the study was first obtained from the Health Sciences Research Ethics Committee of the University of the Free State (UFS-HSD2019/2198/2502). An information document invited principals to consider allowing practitioners in their ECDC to participate in the study. Practitioners were then informed and invited to participate and give consent. All consent and information documentation were available in English, Afrikaans, and Setswana. Participation in this study was voluntary, and the study process followed ethical principles based on the Helsinki Declaration (World Medical Association 2013). Confidentiality, respect for persons, beneficence and non-maleficence, and distributive justice were maintained throughout the study.

Results

Table 1 reports on ECD practitioners' awareness of gross motor milestone acquisition.

Neck control (68%) and walking alone (62%) stood out as milestones of which ECD practitioners had the highest awareness. Milestones with the fewest correct answers (2%), indicating low awareness, included walking forward on a line, standing on one foot, standing on tiptoes, kicking, throwing, and catching a ball. Participants' awareness of motor milestone attainment was better for milestones achieved by children younger than 1 year compared with milestones attained at later ages. Walking forward on a line (mean = 34.88 months) and kicking a ball (mean = 35.22 months) were both overestimated, whereas standing on one foot (mean = 37.40 months), standing on tiptoes (mean = 38.50 months), and catching a ball (mean = 37.54 months) were underestimated.

Results of various statements relating to the importance of gross motor milestones revealed the following. All the participants (100%) agreed that gross motor milestones improve spatial orientation, bilateral integration, and balance. Most participants also agreed that gross motor milestones help children to grow and develop (98%) and contribute to their holistic development (98%). Almost a quarter of participants disagreed that gross motor milestones provide a basis for lifelong learning (24%) and that it underlies good academic achievement (22%).

Table 2 depicts participants' awareness of movement guidelines set out by the South African 24-h movement guidelines for age from birth to 5 years and the WHO's physical activity guidelines (Draper et al. 2020; WHO 2019).

TABLE 1: Early childhood development practitioners' awareness of gross motor milestone acquisition.

Motor milestone	% Correct answer	Correct answer† (Months)	Mean	SD	Min	P25	Median	P75	Max
Neck control	68	2–4	3.82	1.51	1.00	3.00	3.00	5.00	8.00
Rolling	54	5–7	5.54	1.82	3.00	4.00	5.00	6.00	12.00
Sitting with support	36	4–5	6.06	1.68	4.00	5.00	6.00	7.00	12.00
Sitting without support	50	6–7	7.74	1.94	6.00	6.00	7.50	9.00	15.00
Hands and knees crawling	38	8–9	8.90	2.31	5.00	8.00	9.00	10.00	18.00
Standing with assistance	54	9–10	10.32	2.04	7.00	9.00	10.00	11.00	18.00
Walking with assistance	52	10–11	11.64	3.05	7.00	10.00	11.00	12.00	24.00
Standing alone	54	11–12	13.02	4.04	10.00	12.00	12.00	13.00	36.00
Walking alone	62	12–13	14.12	4.25	11.00	12.00	13.00	14.00	36.00
Running	6	19–20	17.60	5.14	11.00	14.00	16.50	18.00	36.00
Walking upstairs	28	23–24	21.38	6.69	12.00	17.00	20.00	24.00	44.00
Walking downstairs	6	25–26	24.00	7.52	12.00	20.00	24.00	24.00	48.00
Jumping two feet	44	23–24	27.28	10.03	15.00	24.00	24.00	28.00	72.00
Walking on tiptoes	8	29–30	28.58	11.05	15.00	24.00	24.00	36.00	72.00
Walking forward on a line	2	27–28	34.88	12.22	15.00	24.00	36.00	36.00	72.00
Standing on one foot	2	45–46	37.40	13.15	16.00	26.00	36.00	48.00	84.00
Standing on tiptoes	2	51–52	38.50	14.18	18.00	24.00	36.00	48.00	84.00
Kicking a ball	2	29–30	35.22	14.47	12.00	24.00	36.00	48.00	72.00
Throwing a ball	2	39–40	38.18	17.07	12.00	24.00	36.00	48.00	84.00
Catching a ball	2	41–42	37.54	15.76	12.00	24.00	36.00	48.00	78.00

SD, Standard deviation; Min, minimum; P25, 25th percentile; P75, 75th percentile; Max, maximum; N, number of participants.

†, Correct answers derived from the following sources: Folio and Fewell (2000), Gerber et al. (2010), Goodway et al. (2019), Scharf, Scharf and Stroustrup (2016).

Awareness of television or screen time for babies (birth–12 months) seems to be high, with 68% of participants correctly indicating the guideline. However, less than 40% of the participants gave correct answers to the remaining questions on television or screen time, moving or being active, and sleep. No correct answers were provided in the physical activity category for toddlers (1–2 years) and children (3–4 years). Only 18% indicated the correct answer for babies from birth to 12 months. Regarding sleep guidelines, 30% of the participants gave the correct answers for toddlers (1–2 years) and only 20% for babies from birth to 11 months old. A mere 16% of participants provided the correct sleep guideline for children 3–4 years old.

Statements on the importance of movement guidelines provided the following results. All participants (100%) agreed that physical movement benefits children's growth and development and that enough sleep is vital for children

TABLE 2: Early childhood development practitioners' awareness of movement guidelines ($N = 50$).

Age groups	Correct answers [†]		Correct answer
	<i>N</i>	%	
Television and/or screen time			
Baby (0–12 months)	34	68	Not at all
Toddler (1–2 years)	11	22	Hour or less
Child (3–4 years)	16	32	Hour or less
Moving and/or being active			
Baby (0–12 months)	9	18	30 min
Toddler (1–2 years)	0	0	3 h
Child (3–4 years)	0	0	3 h
Sleeping (including naps)			
Baby (0–3 months)	10	20	14–17 h
Baby (4–11 months)	10	20	12–16 h
Toddler (1–2 years)	15	30	11–14 h
Child (3–4 years)	8	16	10–13 h

%, percentage; *N*, number.

[†], Correct answers derived from the following sources: Draper et al. 2020, WHO (2019).

TABLE 3: Associations between demographic aspects and participants' awareness.

Motor milestone	Demographic aspects							
	Qualification		Work experience		Own children		Age of youngest child	
	<i>p</i>	chi-square	<i>p</i>	chi-square	<i>p</i>	Prob.	<i>p</i>	chi-square
Neck control	0.972	0.001	0.213	1.548	0.102	0.048	0.296	1.094
Rolling	0.754	0.098	0.624	0.241	0.373	0.147	0.900	0.016
Sitting with support	0.432	0.672	0.849	0.037	0.532	0.181	0.527	0.400
Sitting without support	0.412	0.674	0.359	0.840	1.000	0.238	0.402	0.702
Hands and knees crawling	0.467	0.529	0.131	2.282	0.228	0.111	0.297	1.087
Standing with assistance	0.357	0.850	0.462	0.541	0.766	0.221	0.823	0.050
Walking with assistance	0.091	2.863	0.328	0.957	0.227	0.092	0.329	0.954
Standing alone	0.357	0.850	0.462	0.541	0.007*	0.005	0.854	0.034
Walking alone	0.070	3.273	0.314	1.014	1.000	0.244	0.375	0.788
Walking upstairs	0.289	1.124	0.786	0.074	1.000	0.255	0.534	0.387
Jumping two feet	0.882	0.022	0.295	1.095	0.076	0.045	0.046*	3.999

Prob, probability.

* $p \leq 0.05$.

to function well during the day. Most participants (98%) considered outdoor play necessary for children under 5. Interestingly, 26% of the participants indicated that physical movement does not affect how a child develops academically, and 24% indicated that limited stimulation and opportunities for early learning do not affect the development of motor and physical development.

Regarding associations, Table 3 indicates no significant associations between gross motor milestone acquisition awareness and participants' qualifications or work experience. Statistically significant associations were, however, found between having children themselves ($p = 0.007$) and correctly indicating standing alone as a milestone, as well as between the age of a participant's youngest child ($p = 0.046$) and accurately providing the motor milestone of jumping 2 feet.

Furthermore, no statistically significant associations were found between participants' awareness of movement guidelines and their demographic aspects, work experience, or training.

Discussion

Awareness of gross motor milestone acquisition and movement guidelines

Research on ECD practitioners' knowledge of gross motor milestone acquisition is limited as most research reports only on children's motor milestone achievement. In this study, participants' awareness of the ages of milestone attainment was most accurate for milestones between birth and 1 year, with awareness decreasing for milestones attained at older ages. Only one study examining the knowledge of ECD practitioners could be found. This study was conducted in Quebec and reports on the general knowledge of ECD practitioners regarding developmental milestones for children between 12 and 60 months of age (Di Francesco 2011). The practitioners achieved 44.06% for knowledge of milestones in general (Di Francesco 2011). This study indicated that practitioners' knowledge of milestones for

children 12 months and older was mainly less than 10%, which is far less than Di Francesco's (2011) 44%. Although both studies reported on practitioners' knowledge, the study population differed, possibly influencing the findings. Additionally, provincial regulations in Quebec stipulate that two-thirds of the practitioners in an ECDC and 50% of the practitioners in the classroom must be qualified (Di Francesco 2011). Therefore, the participants' education and qualifications might also contribute to the difference in results.

Although all the participants in our study agreed that gross motor milestones improve spatial orientation, bilateral integration, and balance, almost a quarter of participants disagreed that gross motor milestones provide a basis for lifelong learning and that it underlies good academic achievement. Our findings thus support the conclusions of Smit et al. (2021), who indicated that ECD practitioners required additional information and training on developmental milestones. Poor knowledge of gross motor milestones can limit ECD practitioners' ability to identify developmental delays and create opportunities for stimulation for optimal milestone development (Ebrahim et al. 2013; Smit et al. 2021). On the other hand, adequate knowledge of age-specific gross motor milestones can assist ECD practitioners in creating stimulation opportunities and optimal milestone development (Di Francesco 2011; Ebrahim et al. 2013; Smit et al. 2021). Evidently, additional training to enhance ECD practitioners' knowledge of gross motor milestones is essential.

The literature highlights the importance of children meeting movement guidelines while referring to the role of ECD practitioners in children's physical activity levels (Lu & Montague 2016; Martyniuk & Tucker 2014). The results of this study indicate a need to increase practitioners' awareness of the movement guidelines for physical activity, screen time, and sleeping, as less than 40% of the practitioners could provide correct answers to the questions regarding these guidelines (Draper et al. 2020; WHO 2019).

In addition to ECD practitioners' limited awareness of the movement guidelines, they also portrayed a lack of awareness of the importance of physical movement. Participants indicated that physical movement does not affect how a child develops academically and that limited stimulation and opportunities for early learning do not affect the development of motor and physical development. Sevimli-Celik and Johnson (2013) report similar findings, namely that, although most practitioners support physical activity during the early childhood years, their knowledge regarding physical activity is limited. These findings imply that although ECD practitioners deem physical activity necessary, they do not always know why, identifying a gap to be filled by ECD-related learning opportunities.

Two possible reasons can be argued for ECD practitioners' poor awareness of gross motor milestone acquisition and movement guidelines. The first reason includes limited exposure to or participation in ECD learning opportunities.

Although not the focus or primary aim of this study, ECD practitioners in our study had limited training to enhance their ECD knowledge. Eighteen percent completed Grade 9, 52% Grade 12, 28% held diplomas, and only 2% tertiary degrees. Various studies report on the range of qualifications of ECD practitioners in South Africa. The national audit of ECDCs indicates that only 40% of South African practitioners attended ECD-related training workshops between 2013 and 2014 (Department of Social Development 2014). In 2021 the South African ECD census found that 21% of ECD practitioners had no relevant ECD qualification, while 42% had an NQF level 4 or 5 (Department of Basic Education 2022). Only 10% of ECD practitioners had a NQF 6 to 9 qualification, and 27% participated in an accredited skills programme (Department of Basic Education 2022). In the study of Smit et al. (2021), a quarter of ECD practitioners did not complete high school, while nearly 50% of participants held ECD certificates, and only 2.6% had ECD diplomas. Only 9.3% of ECD these practitioners in Tshwane attended ECD training within the previous year, 16.6% had undergone training 2–3 years ago, and 26.6% were enrolled in ECD training at the time of the study (Smit et al. 2021). The second reason is the availability of ECD training opportunities and content covered in these training environments. In this regard, Henry and Namhla (2020) recently identified significant barriers in ECD training as limited successful CPD presentation opportunities and a lack of qualified facilitators with the necessary knowledge to present these CPD programmes.

Associations between demographic aspects and participants' awareness

This study found, in line with the findings of Smit et al. (2021), no significant associations between practitioners' awareness of gross motor milestone acquisition and their qualifications or ECD-related work experience. However, in the comparative study, ECD practitioners in Tshwane who completed high school did provide 4.702 times more correct responses on a questionnaire on ECD-related knowledge than practitioners with less school education ($p = 0.001$) (Smit et al. 2021).

A significant association was found between ECD practitioners having children and their awareness of gross motor milestones, such as standing alone, and an association between the ages of practitioners' youngest children and their awareness of the recommended age for jumping with two feet. These findings can be linked with those of Smit et al. (2021), indicating that ECD knowledge can be associated with parental experience. First-hand parental experience can therefore be viewed as contributing to ECD practitioners' awareness of gross motor development. In support of the results of this study, Smit et al. (2021) found that ECD practitioners with children scored 3.76 times ($p = 0.038$) more correct responses on a questionnaire that tested ECD-related knowledge. However, this study found no statistically significant associations between practitioners' awareness (as measured by correct answers) of recommended screen time, physical activity, sleep guidelines, and having children

themselves or the age group they were working with. Our sample size can be a possible reason for the non-significant associations found. Although the sample consisted of 50 ECD practitioners, the subgroups used for associations were mostly between 10 and 15, which is relatively small.

Conclusion

Early childhood development practitioners in Vanderbijlpark, South Africa, have poor awareness regarding the age of gross motor milestone acquisition and movement guidelines of young children. It also became apparent in the statements on the importance of gross motor milestones and movement guidelines that practitioners did not have sufficient knowledge of the importance of these aspects on development and lifelong learning. Associations between ECD practitioners' demographic aspects and their awareness were mainly non-significant, except for having children.

Early childhood development practitioners' limited knowledge and awareness of the mentioned aspects are alarming, especially considering their critical role in children's development and future success. With children spending a lot of time in ECD practitioners' care, enhancing their awareness of gross motor milestone acquisition and movement guidelines through ECD-related training, qualifications, CPD opportunities, and short courses is necessary.

Limitations

Positive and valuable information emerged from this study; however, some limitations can be identified. This study only focused on ECD practitioners in the Vanderbijlpark area of South Africa. Furthermore, the study only included ECDCs registered with the Department of Social Development, South Africa, thus, limiting the sample size. The study did not consider socio-economic status, which influences the availability of resources at ECDCs and the training needed to increase children's physical movement and gross motor milestone acquisition. These limitations impact the overall generalisability of the results.

Recommendations

Further ECD-related training is highly recommended, specifically regarding the importance of physical movement and gross motor milestone acquisition of children, and its implementation in the ECD environment. Training can be achieved through workshops presented by qualified Kinderkineticists at ECDCs in Vanderbijlpark and across South Africa. Early childhood development practitioners should also be encouraged to attend short courses and CPD opportunities to improve their knowledge of child development. It is recommended that practitioners should at least have completed high school (Grade 12), with additional ECD-related training either through short courses or a diploma or certificate.

In addition, movement specialists, such as Kinderkineticists should assist practitioners in providing children with age-

appropriate, stimulating movement programmes to increase children's physical activity levels and improve gross motor milestone acquisition. Furthermore, valuable and informative research from this small-scale study is ideal for researchers as a helpful start for future work in this area. More extensive studies across provinces could provide a more detailed representation of practitioners' knowledge. Future studies should also include a more comprehensive population sample and distinguish between well-resourced and under-resourced ECDCs. Findings can inform guidance provided to the Department of Social Development on the curriculum for ECD practitioners and the content of CDP courses presented to practitioners.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

This article formed part of a master's degree, where E.v.d.M. and B.A.C. were supervisors and V.G. the student. All three were part of the planning and conceptualisation of study. V.G. collected all data with the assistance of E.v.d.M. Writing of the first draft was done by V.G., while E.v.d.M. and B.A.C. contributed to the refinement of the manuscript. All three authors contributed to the final product.

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Data availability

The data that support the findings of this study are available on request from the corresponding author, V.G. The data are

not publicly available because it contains information that could compromise the privacy of research participants.

Disclaimer

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