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Clinician and early childhood educator knowledge and advice given to parents regarding physical activity, screen time and sleep. An observational study

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ABSTRACT

Background: Global guidelines regarding infant physical activity, screen time and sleep were released by the World Health Organisation in 2019. Clinician and Early Childhood Educator's knowledge and advice given to parents regarding this content is unknown. The aims of this study were to determine the advice given to parents regarding infant care. This will enable a baseline from which future interventions and multidisciplinary professional development can be compared and reviewed.

Methods: 80 Clinicians (Medical, Nursing, Allied Health) and Early Childhood Educators from a local health district in NSW Australia completed an online survey. Medical records ($N = 272$) were also reviewed to determine if the documentation included advice in accordance with guidelines.

Findings: Staff were aware that infant guidelines contributes to positive health outcomes (all >85%). Nursing entered the most information into the medical record with >80% of files containing general advice about infant physical activity and sleep. Only 30% of entries contained evidence of guideline specific information. Minimal entries from all clinicians contained information about screen time (2%).

Discussion: The majority of clinicians and Early Childhood Educators were aware of the content of the guidelines and the advice they report to provide is consistent. Medical record documentation regarding the specificity of advice provided is lacking.

Application to practice: This study provides a baseline from which professional development interventions aimed at increasing compliance to infant guidelines can be compared.

Introduction

The early years (<5 years of age) are a time of rapid physical and cognitive development (Willumsen & Bull, 2020). Lifestyle habits and routines regarding physical activity, sleep and sedentary behaviour (screen time) are initiated and further developed (Willumsen & Bull, 2020). The interaction between these behaviours on both physical and mental health are reported as important considerations in the prevention of childhood obesity (Commission on Ending Childhood Obesity, 2016). Canada and Australia developed the 24-h movement guidelines regarding physical activity, screen time and sleep in 2017 (Tremblay et al., 2017). These were used to inform the development of the World Health Organisation (WHO) guidelines which were released in 2019 (World Health Organisation, 2019). These guidelines recommend the amount, type and frequency of physical activity, screen time and sleep for optimal health benefits. These guidelines are being actively disseminated through the collaborative partners who are part of the Global Action Plan on Physical Activity 2018–2030 (World Health Organization, 2018). Within these guidelines there are also infant specific guidelines regarding healthy amounts of physical activity, screen time and sleep to ensure positive childhood health and development.

The content of the guidelines is important information to translate to parents. Information regarding the amount of physical activity, sedentary behaviour and sleep recommended for infants has been developed from the best available evidence. Greater amounts of physical activity (tummy time) has been shown to be associated with higher motor

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and personal-social development scores at 6 months of age (Carson et al., 2022). Similarly, screen time is associated with unfavourable health outcomes (Poitras et al., 2017) and a chronic lack of sleep up to seven years of age has been shown to be associated with obesity in childhood (Chen et al., 2008)". The prevalence of Australian infants ($N = 455$, mean age 3.6 months) meeting the 24-h movement guidelines have been reported in the literature (Hesketh et al., 2017). Physical activity (daily tummy time of 30 min per day), screen time (none) and sleep (14–17 h for 0–3 month old infants; 12–16 h for 4–11 month old infants) guidelines was met by 29.7%, 27.9% and 58.7% of the participants respectively. Meeting all three of the guidelines at the same time was also low (3.5%) (Hesketh et al., 2017).

Guidelines are only effective if the relevant stakeholders are aware of and implement the recommendations (Brouwers et al., 2010). In addition, the uptake of the guidelines is important to ultimately positively influence health and development of the intended population (Brouwers et al., 2010; Gagliardi et al., 2011). Understanding current awareness of and the content of the advice given regarding the Australian 24-h movement and WHO guidelines on infant physical activity, screen time and sleep will assist to inform the success of the translation of the guidelines into everyday clinical and educational practice. Whilst it is well reported in the literature that interventions to increase the uptake of the guidelines are required to assist parents with appropriate health strategies from birth, (Hesketh et al., 2017; Hewitt et al., 2018; Hewitt et al., 2020) clinician (Nursing, Allied Health, Medical) and Early Childhood Educator's knowledge of and compliance with recommended amounts of physical activity, screen time and sleep in accordance with the guidelines is unknown.

One way to determine the standard of care delivered to a patient is to review the clinician's documentation regarding their interaction with the patient (Khan et al., 2020). This information is found in the patient's medical record. Including a review of the medical record documentation of clinical practice can help determine if future strategies assist with improving compliance with evidence-based guidelines (Elliott et al., 2017; Taiye, 2015). Another way is to survey the advice reported to provide regarding the clinician's encounters with their patients. Both methods of assessing compliance are helpful and can be incorporated into continuing professional development.

To determine the current knowledge of the Australian 24-h and WHO guidelines on infant physical activity, screen time and sleep, an audit of current clinician (Nursing, Allied Health, Medical) and Early Childhood Educator's knowledge and the advice given to parents regarding the care of infants is required. This will enable a baseline from which future interventions can be compared. The aims of this study were to: 1) determine the amount of knowledge clinicians and Early Childhood Educators have regarding guidelines on infant physical activity, screen time and sleep; and 2) determine if clinicians and Early Childhood Educators provide advice in accordance with the guidelines on infant physical activity, screen time and sleep.

Methods

Part 1: Self report of clinicians and Early Childhood Educators (Online survey)

An invitation to complete an online survey was sent to medical, nursing and allied health staff via email who were involved in the direct care of infants. All staff were from the same local health district in NSW, Australia. The invitation was also sent to Early Childhood Educators who regularly interact with this health district's health promotion unit. The Health District's Low and Negligible Risk Research Review Committee (ISLHD/LNR/2020–007) approved this study.

Participants self-reported demographic information, knowledge and advice given to parents about physical activity (tummy time), sleep and screen time and awareness of the Australian 24-h Movement Guidelines for the Early Years (Australian 24-Hour Movement Guidelines, 2017) and WHO physical activity, sedentary behaviour and sleep guidelines for children under the age of five years (World Health Organisation, 2019).

Part 2 - Medical record evidence of recommendations

Randomized medical records from patients (mother and baby dyads) admitted for the delivery of a baby from the 1st January 2018 to 31st December 2019 were reviewed (inclusion criteria). Mothers who gave birth outside this date range or who were admitted to hospital for a different reason were excluded. The sample size for the medical record review was 136 as per the sample size calculator using a 10% proportion, 5% margin of error, population 6000 and 95% confidence interval. (https://select-statistics.co.uk/calculators/sample-size-calculator-population-proportion/). Data from patients who were identified from the specialty "obstetrics" were placed in one list ($N = 6788$) and then randomized using a computer generated random numbers program to obtain 136 files each from mother and baby admissions ($N = 272$). This study followed the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) guidelines (Von Elm et al., 2008).

The researchers who completed the medical record reviews were clinicians who had extensive experience in reviewing and recording information in the medical records from this health service and specialty. To ensure the accuracy of the data collected, the initial five records were reviewed by three researchers to confirm consistency of recording (inter-rater reliability = 98%). The reviewers also followed the prescriptive and objective categorization of information (Table 1). No researcher reviewed a patient's file in which they had made an entry or were the treating health care professional. Medical records were reviewed for information documented regarding advice given about infant physical activity, screen time and sleep. Each patient medical record contains information about all visits to the health care facilities in the district. As such, all entries relating to the mother and baby (for example, inpatient, outpatient, emergency) were reviewed. There were 4 labels in which the information was categorized - general information, more information, specific information and not applicable (Table 1).

Data analysis

Data were analysed descriptively. The percentage of clinicians who had knowledge of and provided advice in accordance with the guidelines were calculated. Outcomes were not compared between socioeconomic group of parents and infant conditions due to limited variety. Kruskal-Wallis tests and pairwise comparisons (Dwass-Steel-Critchlow-Fligner) were used to determine differences between the professions. Statistical analyses were performed with Jamovi version 1.6 (The jamovi project (2021). https://www.jamovi.org). Statistical significance was set at $P < 0.05$.

Results

Part 1: Self report of clinicians and Early Childhood Educators (Online survey)

Overall, 80 participants consented to complete the online survey in August and September 2020. Fifty-two were clinicians from a local health district (62% from Nursing, 23% Medical and Allied Health, 15% did not disclose), most of whom were employed part time (69.2%) with >10 years' experience (54.4%). There were 28 Early Childhood Educators (60% degree trained, 40% diploma/certificate III trained) located in the same health district who also completed the online survey. The majority of the Early Childhood Educators were from centre-based childcare centres (76%) and family day care centres (16%), they were mostly full time employees (76.9%) with >15 years' experience (56%). The participants reported that they saw approximately 10 infants per day in their usual workday.

Table 1
Categorization of the information in the medical record.

Physical Activity	Sleep	Screen time
General		
Example "motor development" or "Learn the signs act early (LTSAE)" written in medical record	"sleep/settling" written in medical record	"screen time" written in medical record
More information		
Example "told mum that tummy time can start from birth; "practiced rolling appropriate for age group"; "discussed play/feed/sleep"	"discussed routines with mum about sleeping times appropriate for age group"; "discussed play/feed/sleep"	"discussed screen time with mum that it was harmful to an infant"
Specific to guidelines		
Example -Must specifically document "30 min" of tummy time per day -Provided parent with written information that includes the guidelines.	-Must specifically document "14–17 h" for 0-3 months baby, "12–16 h" for 4–11 month baby -Provided parent with written information that includes the guidelines.	-Must specifically document "no screens for infants" -Provided parent with written information that includes the guidelines.
Not Applicable (N/A)		
Example • If not seen by nursing, allied health or medical as an inpatient or an outpatient (i.e. the staff member did not have the opportunity to provide this information about physical activity, sleep or screen time). • If the infant was seen by staff at an emergency department for an injury or illness requiring emergency care (e.g. rash, head injury, respiratory condition). • If baby was <37 weeks, N/A for Physical activity (specific) for inpatient section as not suitable for this age group.		

Less than half of the clinicians reported that they were aware of the WHO guidelines (43.6%) and <30% were aware of the Australian 24-h movement guidelines (28.2%). Despite this, clinicians were aware that infant physical activity is recommended as a daily activity, tummy time is >30 min per day, screen time is to be limited and sleep is on average 15 h per night. The majority of clinicians were aware that being active for 30 min per day in tummy time, having enough sleep and restricting an infant's screen time contributes to an infant's health (86.1%, 95.4%, and 100% respectively) (Table 2).

The majority of the Early Childhood Educator's reported they were aware of the WHO guidelines (69.2%) and the Australian 24-h movement guidelines (69.2%). Early Childhood Educators were also aware that infant physical activity is recommended as a daily activity, tummy time is >30 min per day, screen time is to be limited and sleep is on average 15 h per night. The majority of Early Childhood Educators were aware that being active for 30 min per day in tummy time, having enough sleep and restricting an infant's screen time contributes to an infant's health (85.7%, 84.6%, and 91.7% respectively) (Table 2).

Clinicians' reported giving the most advice to parents regarding movement/physical development (64%) and sleep/settling (64%). The majority of clinicians encouraged parents to provide tummy time and adequate sleep for their infants often or very often (>81%), demonstrated tummy time or sleep/settling technique with the parent (>62%) and informed parents that infant physical activity and an appropriate amount of sleep is good for their infant's health (>57%). Approximately 50% of clinicians encouraged parents (often/very often) to avoid exposing their infants to screen time (Table 3).

Early Childhood Educator's reported giving the most advice regarding movement/physical development (59.1%) and sleep/settling (54.4%). Less than half of the Early Childhood Educator's encouraged parents to provide tummy time for their infants often or very often (46.7%) or demonstrated tummy time with the parent to teach them about infant physical activity (26.7%). However, the majority reported they often or very often told parents that infant physical activity was good for their infant's health (60%). In regards to sleep, the majority of Early Childhood Educator's (53.3%) encouraged parents to provide adequate sleep for their infants. However, <40% demonstrated a sleep/settling technique often or very often (26.7%) or told a parent that an appropriate amount of sleep was good for their infant's health (40%). Approximately 40% of Early Childhood Educator's encouraged parents (often/very often) to avoid exposing their infants to screen time (40%) or demonstrated alternate activities a parent could use instead of screen time with their infant (40%) (Table 3).

Part 2 - Medical record evidence of recommendations

Patient's demographic data are presented (Table 4). The medical records of 136 mother and the corresponding 136 infant files were reviewed. The majority were healthy babies who were born full-term (88%). Length of stay in hospital for both mother and baby were approximately 5 days.

Information regarding physical activity (general) whilst the mother and baby were in hospital was mostly provided from nursing staff (10.6% of medical records compared with 1.2% each for allied health and medical staff, $p < 0.001$). The majority of documentation from allied health staff was classified as "Not Applicable" (66–78%) for all three categories (general, more information, specific) as there were minimal referrals requesting their services. Of the entries that were applicable, 1.2% of entries contained general information regarding physical activity and sleep (general) and none contained more information or specific advice regarding infant physical activity and sleep. No entry contained any information about screen time. From the entries written by medical staff, physical activity and sleep was documented (general) in 1.2% of the entries, there was no documentation regarding screen time or more information/specific advice regarding physical activity and sleep.

Table 2
Knowledge of the guidelines (online survey).

Question	Clinician						Early Childhood Educator					
	Yes		No		Don't know		Yes		No		Don't know	
	n	%	n	%	n	%	n	%	n	%	n	%
Are you aware of the Australian 24-h Movement Guidelines for the Early Years?	11	28.2	24	61.5	4	10.3	9	69.2	3	23.1	1	7.7
Are you aware of the WHO Physical Activity, Sedentary behaviour and Sleep Guidelines for children under the age of five years?	17	43.6	19	48.7	3	7.7	9	69.2	3	23.1	1	7.7
	Mean		SD		Range		Mean		SD		Range	
In Australia, how many days per week is it recommended that infants (aged birth to 12 months) be physically active? (Days)	6.74		0.83		3–7		6.23		1.74		1–7	
In Australia, how much tummy time is recommended for an infant (aged birth to 12 months) each day (24 h)? (minutes)	46.65		44.72		1–240		38.08		43.18		10–180	
In Australia, how much sleep is recommended for an infant (aged birth to 12 months) each day (24 h)? (hours)	15.14		1.27		12–17		15.77		2.20		10–19	
In Australia, how much screen time is recommended for an infant (aged birth to 12 months) each day (24 h)? (minutes)	3.78		12.10		0–60		2.31		8.32		0–30	

Being active for 30 min per day in tummy time....	Clinician										Early Childhood Educator									
	Strongly Disagree		Disagree		Neither Agree or Disagree		Agree		Strongly Agree		Strongly Disagree		Disagree		Neither Agree or Disagree		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Will keep the infant healthy?	0	0	1	2.3	5	11.6	19	44.2	18	41.9	1	7.1	0	0	1.	7.1	4	28.6	8	57.1
Will benefit the infant's future motor development?	0	0	0	0	1	2.4	10	23.8	31	73.8	1	7.1	0	0	0	0	3	21.4	10	71.4
Will provide the infant with a decreased risk of developing a head shape abnormality?	1	2.3	1	2.3	0	0	10	23.3	31	72.1	2	14.3	0	0	2	14.3	5	35.7	5	35.7
Is not necessary for infants to keep healthy?	39	67.4	10	23.3	4	9.3	0	0	0	0	10	71.4	1	7.1	1	7.1	1	7.1	1	7.1
Is difficult to achieve?	11	25.6	21	48.8	9	20.9	0	0	2	4.7	8	57.1	2	14.3	2	14.3	1	7.1	1	7.1
Has an association with the prevention of obesity as the child ages?	2	4.8	1	2.4	20	47.6	14	33	5	11.9	1	7.1	0	0	7	50	4	28.6	2	14.3
Having enough sleep (14–17 h for 0–3 month olds and 12–16 h for 4–11 month old)....																				
Will keep the infant healthy?	0	0	0	0	2	4.7	25	53.5	18	41.9	1	7.7	0	0	1	7.7	4	30.8	7	53.8
Is not necessary for infants to keep healthy?	23	53.5	15	34.9	3	7.0	1	2.3	1	2.3	9	69.2	2	15.4	2	15.4	0	0	0	0
Is difficult to achieve?	4	9.3	14	32.6	16	37.2	8	18.6	1	2.3	3	23.1	5	38.5	5	38.5	0	0	0	0
Has an association with the prevention of obesity as the child ages?	1	2.3	1	2.3	15	34.9	23	53.5	3	7	1	7.7	0	0	8	61.5	3	23.1	1	7.7
Restricting an infant's screen time (i.e. No screen time)....																				
Will keep the infant healthy?	0	0	0	0	0	0	22	52.4	20	47.6	0	0	1	8.3	0	0	5	41.7	6	50
Will benefit the infant's future motor development?	0	0	0	0	2	4.9	17	41.5	22	53.7	0	0	0	0	1	8.3	3	25	8	66.7
Is not necessary for infants to keep healthy?	21	50	14	33.3	3	7.1	1	2.4	3	7.1	8	66.7	0	0	1	8.3	3	25	0	0
Is difficult to achieve?	10	24.4	13	31.7	11	26.8	6	14.6	1	2.4	5	41.7	3	25	3	25	1	8.3	0	0
Has an association with the prevention of obesity as the child ages?	0	0	0	0	7	16.7	24	57.1	11	26.2	0	0	3	25	2	16.7	0	0	7	58.3

Note. $N = 80$ ($n = 52$ Clinicians; $n = 28$ Early Childhood Educators).

Table 3
Online survey – Clinician and Early Childhood Educator advice to parents.

Question	Clinician																					
	Social/ emotional		Language/ communication		Cognitive/ learning		Movement/ physical development		Sleep/ settling		No advice given		Early Childhood Educator									
													Social/ emotional		Language/ communication		Cognitive/ learning		Movement/ physical development		Sleep/ settling		No advice given	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
What would be the main area you provide advice?	17	37.8	13	28.9	13	28.9	29	64.4	29	64.4	0	0	10	45.5	11	50	10	45.5	13	59.1	12	54.4	7	31.8
	Never		Rarely		Sometimes		Often		Very often				Never		Rarely		Sometimes		Often		Very often			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Encouraged the parent to provide tummy time for their infants	0	0	6	14	0		0		37		86		0		0		0		0		8		40	
Demonstrated infant physical activity (e.g. tummy time) with the parent to teach them about infant physical activity	0	0	7	16.3	7		16.3		11		25.6		18		41.9		3		20		0		0	
Assisted a parent to learn more about infant physical activity by providing a referral to another service/gave information	0	0	6	13.9	18		41.9		15		34.9		4		9.3		2		13.3		0		0	
Told a parent that infant physical activity is good for their infant's health	0	0	6	14	11		25.6		10		23.3		16		37.2		1		6.7		0		0	
Encourage the parents to provide adequate sleep for their infants	0	0	4	9.3	4		9.3		15		34.9		20		46.5		2		13.3		0		0	
Demonstrated a sleep/settling technique with the parents to teach them about infant sleep	5	11.6	7	16.3	4		9.3		7		16.3		20		46.5		1		6.7		3		20	
Assisted a parent to learn more about infant sleep practises by providing a referral to another service/gave information	3	7	4	9.3	11		25.6		16		37.2		9		20.9		1		6.7		4		26.7	
Told a parent that an appropriate amount of sleep is good for their infant's health	4	9.5	3	7.1	11		26.2		15		35.7		9		21.4		1		6.7		4		26.7	
Encourage the parents to avoid exposing their infant to screen time	4	9.5	4	9.5	12		28.6		18		42.9		4		9.5		2		13.3		4		26.7	
Demonstrate alternate activities a parent could use instead of screen time with their infant	7	16.3	4	9.3	10		23.3		16		37.2		6		14		2		13.3		4		26.7	
Assisted a parent to learn more about restricting infant screen time by providing a referral to another service/gave information	15	36.6	9	22	14		36.1		3		7.3		0		0		5		35.7		2		14.3	
Told a parent that screen time is not good for their infant's health	7	16.7	10	23.8	12		28.6		10		23.8		3		7.1		4		26.7		4		26.7	

Question	Early Childhood Educator											
	Cognitive/ learning		Movement/ physical development		Sleep/ settling		No advice given					
	n	%	n	%	n	%	n	%				
What would be the main area you provide advice?	10	45.5	13	59.1	12	54.4	7	31.8				
	Sometimes		Often		Very often							
	n	%	n	%	n	%	n	%				
Encouraged the parent to provide tummy time for their infants	0		0		5		46.7	0	0			
Demonstrated infant physical activity (e.g. tummy time) with the parent to teach them about infant physical activity	5		33.3		3		20	4	26.7			
Assisted a parent to learn more about infant physical activity by providing a referral to another service/gave information	4		26.7		6		40	3	20			
Told a parent that infant physical activity is good for their infant's health	4		26.7		1		6.7	4	26.7			
Encourage the parents to provide adequate sleep for their infants	1		6.7		4		26.7	5	33.3			
Demonstrated a sleep/settling technique with the parents to teach them about infant sleep	7		46.7		3		20	1	6.7			
Assisted a parent to learn more about infant sleep practises by providing a referral to another service/gave information	5		33.3		5		33.3	0	0			
Told a parent that an appropriate amount of sleep is good for their infant's health	4		26.7		5		33.3	1	6.7			
Encourage the parents to avoid exposing their infant to screen time	3		20		3		20	3	20			
Demonstrate alternate activities a parent could use instead of screen time with their infant	3		20		5		33.3	1	6.7			
Assisted a parent to learn more about restricting infant screen time by providing a referral to another service/gave information	5		35.7		1		7.1	1	7.1			
Told a parent that screen time is not good for their infant's health	4		26.7		1		6.7	2	13.3			

Note. N = 80 (n = 52 Clinicians; n = 28 Early Childhood Educators).

Table 4
Demographic data.

Mothers		
	Mean	SD
Age (years)	29.1	5.8
Length of stay (days)	5	10.8
	n	%
Birth type		
Normal Vaginal Birth (NVB)	84	61.5
Caesarean Sectio	45	32.7
Instrumental	7	5.8
Language		
English	135	99.2
Other	1	0.8
Infants		
	Mean	SD
Birth gestation (weeks)	38.5	2.2
Length of stay (days)	5.3	17.2
Birth weight (Kg)	3.4	0.6
Birth length (cm)	50.4	2.7
Apgar Score 5 min	8.8	0.1
	n	%
Sex		
Male	82	60
Female	54	40
Healthy		
Yes	120	88.2
No	16	11.8
IUGR		
Yes	9	6.6
No	127	93.4
Prematurity (<32 weeks)		
Yes	1	1
No	135	99
Prematurity (32–37 weeks)		
Yes	17	12.5
No	119	87.5
Identified abnormality at birth		
Yes	5	3.7
No	131	96.3

Note. N = 272 (n = 136 mothers, n = 136 infants). IUGR = Intrauterine growth restriction. SD = standard deviation. N = Number. % = percentage. Kg = Kilograms. cm = centimetres.

Comparisons between professions (Nursing to Allied Health, Nursing to Medicine and Allied Health to Medicine) are reported (Table 5).

Whilst living at home, the mother and baby have the opportunity to access health services situated in the community. These are outpatient clinics such as appointments with an early childhood nurse at a community health centre, a physiotherapist to review head shape or motor development, or a paediatrician for growth and development. Information regarding physical activity and sleep during this time was mostly provided from nursing staff rather than allied health or medical staff ($p < 0.001$). From the nursing entries, 84.7%, 51.8% and 30.6% of files reviewed had general, more information and specific information about infant physical activity respectively. Similar results were found for sleep, minimal nursing entries contained information about screen time (2%). The majority of entries from allied health and medicine were categorized as 'not applicable'. From those who did have an opportunity to provide advice regarding physical activity and sleep, 1–7% of entries contained general, more or specific information. No entry from allied health or medicine contained information about screen time. Comparisons between professions (Nursing to Allied Health, Nursing to Medicine and Allied Health to Medicine) are reported (Table 5).

Discussion

This study investigated the amount of knowledge clinicians and Early Childhood Educators have regarding current infant guidelines. In addition, this study also sought to determine if clinicians and Early Childhood Educators provide advice in accordance with the guidelines. Both clinicians and Early Childhood Educators had a working knowledge of the guidelines relating to physical activity, screen time and sleep. They were also aware of the positive impact of infant's being active for 30 min per day in tummy time, having enough sleep and that restricting an infant's screen time on an infant's health. The majority of Early Childhood Educators were aware that this content was from the WHO[4] or from the Australian 24-h movement guidelines for the Early Years (Australian 24-Hour Movement Guidelines, 2017), whereas clinicians were not aware of the source of this content. Despite this, clinician's reported being more practical than Early Childhood Educators in terms of providing encouragement and demonstration regarding physical activity and sleep. Advice and assistance with limiting screen time is lacking from both clinicians and Early Childhood Educators. Whilst clinicians reported that they were aware of and advise parents regarding infant physical activity and sleep, this was not reflected in their documentation that is recorded in the mother and baby medical files. These results are particularly relevant to nursing practice as they provide a baseline from which professional development interventions aimed at increasing compliance with infant guidelines can be compared. The study raises awareness of the importance of the guidelines and continues the discussion about how best to communicate the guidelines to parents.

During the inpatient admission, the immediate need for mothers is to focus on breastfeeding and post-birth recovery. As such, it may not be suitable to discuss the guidelines during this inpatient admission which may explain why there was minimal documentation regarding these topics in the inpatient section of the medical records.

Outpatient services, such as the regular early childhood nurse checkups would be an ideal time to discuss infant physical activity.

Table 5
Comparisons between nursing, allied health, and medical professionals' provision of guideline information.

Guideline information	Inpatient										Outpatient									
	Nursing			Allied Health			Medical			P value code	Nursing			Allied Health			Medical			P value code
	Yes	No	N/A	Yes	No	N/A	Yes	No	N/A		Yes	No	N/A	Yes	No	N/A	Yes	No	N/A	
Physical activity (general)	10.6	88.2	1.2	1.2	32.9	65.9	1.2	90.6	8.3	* ^ #	84.7	8.2	7.1	7.1	16.5	76.5	2.4	22.4	75.3	* ^
Physical activity (more information)	1.2	97.6	1.2	1.2	22.4	76.5	0	92.9	7.1	* #	51.8	41.2	7.1	5.9	17.7	76.5	1.2	16.5	82.4	* ^
Physical activity (specific)	1.2	97.6	1.2	0	22.4	76.5	0	92.9	7.1	* #	30.6	62.4	7.1	3.5	20	76.5	1.2	16.5	82.4	* ^
Sleep (general)	24.7	74.1	1.2	1.2	22.4	76.5	1.2	91.8	7.1	* ^ #	82.4	10.6	7.1	5.9	18.8	75.3	1.2	16.5	81.2	* ^
Sleep (more information)	1.2	97.6	1.2	0	23.5	76.5	0	92.9	7.1	* #	51.8	40	8.2	2.4	22.4	75.3	1.2	16.5	82.4	* ^
Sleep (specific)	1.2	97.6	1.2	0	23.5	76.5	0	92.9	7.1	* #	31.8	60	8.2	2.4	22.4	75.3	1.2	16.5	82.4	* ^
Screen time (general)	0	98.8	1.2	0	23.5	76.5	0	92.9	7.1	* #	2.4	90.6	7.1	0	23.5	76.5	0	17.6	82.4	* ^
Screen time (more information)	0	98.8	1.2	0	23.5	76.5	0	92.9	7.1	* #	2.4	90.6	7.1	0	23.5	76.5	0	17.6	82.4	* ^
Screen time (specific)	0	98.8	1.2	0	24.7	75.3	0	91.8	8.2	* ^ #	2.4	90.6	7.1	0	24.7	75.3	0	17.6	82.4	* ^

Note. N = 272; * = P < 0.001 Nursing to Allied Health; ^ = P < 0.001 Nursing to Medicine; # = p < 0.001 Allied Health to Medicine.

sleep and screen time. During these visits, staff are already providing advice regarding breastfeeding, infant care and mother craft activities. The majority of nursing staff documented in the medical record that general advice was provided regarding physical activity and sleep but not screen time. Investigating the reasons for the lack of advice about screen time was not captured in this study however it would be an important issue to review. Further education regarding the disadvantages of screen time to infant health outcomes (Li et al., 2020) and investigating the impact of specific advice to parents to adhere to the guidelines would be beneficial.

Previous research suggests that education regarding clinical content and providing tools to increase the efficiency associated with documentation can improve the delivery of healthcare (Esper & Walker, 2015; Vadnais & Golen, 2011). Possible reasons for the mismatch in this study between reported (survey) and documented (medical record) care could be speculated as either a lack of understanding of the importance of the specificity of the advice or an issue with being able to document the specificity of the encounter in the busy clinical environment. Future research could investigate the efficacy of an intervention which involved documentation procedures as reminders for evidence-based clinical care.

Practice implications

The outcomes of this study can be used to assist continuing professional development programs regarding infant guidelines. The priority areas could focus on negative effects of screen time, practical tips and strategies for efficient specific documentation (Supplementary file 1). Now that guidance has been provided regarding the appropriate amounts of physical activity, screen time and sleep for infants, concentrated efforts to promote and assist the translation of the guidelines into everyday clinical and educational practises would be beneficial.

Limitations

There were some limitations of this study. The sample size was small and limited to one local health district, as such generalization of these results to other health districts may be limited. However, these results provide a solid baseline to justify further research into the assessment of knowledge and advice given in accordance with the guidelines. The online survey relied upon self-report which may present a response bias, however, that was one of the reasons for including the review of the medical record, to obtain two methods of reporting compliance to the guidelines. Responses from the survey and documentation in the medical record were unable to be matched due to anonymity of the survey respondents. Further research may be able to assess compliance to the guidelines by direct observation using an independent observer and consideration to avoid the Hawthorne effect.

Conclusion

The majority of clinicians and Early Childhood Educators had a sound knowledge of the content of the guidelines and the advice provided to parents was consistent with current infant guidelines regarding the amount of physical activity, screen time and sleep. Medical record documentation regarding the specificity of the advice provided was lacking. Further support is required regarding the negative effects of screen time and efficient strategies for documentation.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Ethics approval statement

The Illawarra Shoalhaven Local Health District Low and Negligible Risk Research Review Committee approved this study. Number: (ISLHD/LNR/2020–007).

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Credit authorship contribution statement

Lyndel Hewitt: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Writing – original draft, Writing – review & editing. **Carolyn Frohmuller:** Methodology, Formal analysis, Investigation, Resources. **Jacinta Wall:** Methodology, Formal analysis, Investigation, Resources, Writing – review & editing. **Anthony D. Okely:** Methodology, Supervision, Writing – review & editing.

Declaration of Competing Interest

The authors have no conflicts of interest to disclose.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pedn.2022.06.010.

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