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What factors influence clinical decision making for paramedics when attending to paediatric emergencies in the community within one ambulance service trust?

What factors influence clinical decision making for paramedics when attending to paediatric emergencies in the community within one Ambulance Service Trust?

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Abstract

Background: Children's healthcare needs are complex and diverse. Paramedics are expected to respond to a range of emergency calls across the patient demographic spectrum, make complex clinical decisions and face growing pressures to seek provisions of care for their patients within the community.

Aim: This study looked to understand the lived experiences of paramedics when attending to paediatric patients; and what factors influenced decision making.

Methods: A qualitative study employing semi-structured interviews, to collect and describe the lived experiences of participants. Participants were paramedics working for an ambulance service responding to calls in the community. Participants varied in experience and registrant level of education. Interview data was transcribed verbatim and analysed utilising inductive thematic analysis.

Results:

Education provoked the most discussion, with a desire for more knowledge and training to improve confidence when attending to patients with low acuity complaints. Confidence was found to be intrinsically linked to experience with clinicians who were more exposed to paediatrics in their professional or personal life displaying more confidence when attending to this patient group. Emotion of clinicians and/or families contribute to the clinical decision making process, coupled with a reliance on clinical guidelines, there is a high probability of a paediatric consultation resulting in conveyance to an emergency department (ED). Provision of care was variable geographically with largely negative experiences observed with attempts for community referrals

Conclusions: Providing a focus of education more reflective of paramedics experiences will address some of the factors discussed by participants. Introducing innovative solutions such as developing guidelines for lower acuity conditions and the introduction of specialist roles could contribute to mitigating the barriers paramedics faced whilst improving the quality of care provided to paediatric patients. Barriers to confidence existing due to lack of exposure may well still exist, as would options to refer to community services.

Keywords: Paramedic. Paediatric. Decision making. Clinical decisions.

Introduction

The National Health Service (NHS) Long Term Plan (2019) recognises children's health needs are diverse and complex with Royal College of Paediatrics and Child's Health (RCPCH) (2018) highlighting children account for 25% of attendances to Emergency Departments (ED). Many of these attendances would be suitable to be managed in the community (McHale et al, 2013). The emergency care system is under pressure (NHS, 2019) requiring differing models of care outside of EDs to be sought. O'Cathain et al (2018) recognised discharge at scene is a complex decision for paramedics and often made in isolation (O'Hara et al,2014).

North West Ambulance Service (NWAS) in an unpublished internal paper acknowledged total calls to the service for patients under the age of sixteen accounted for approximately 9% total call volume. See and treat figures of approximately 13% for this patient group where however disproportionately low in comparison with patients over the age of sixteen (NWAS, 2018).

Houston and Pearson's (2009) literature review identified a requirement for an up to date assessment and evaluation of service provision from United Kingdom (UK) ambulance services for children. The evaluation highlighted training still had little paediatric input. Data surrounding care provided and practitioner confidence was also noted to be lacking.

Taking Healthcare To The Patient (Department of Health (DoH),2005), Transforming Ambulance services (National Audit Office (NAO), 2011) and Taking Healthcare to the Patient 2 (Association of Ambulance Chief Executives (AACE), 2011) have all lent to positive transformation of the ambulance service model of care but within them there has been little mention specific to paediatric care.

Fowler, Beovich and Williams (2017) scoping review of the literature surrounding paramedic confidence with paediatric patients revealed feelings of low confidence and efficacy. This was under pinned by anxiety and showed correlation with a potential of lower quality care for paediatric patients and reluctance to initiate treatment. The study reviewed seventeen articles primarily from the United States of America (USA). The aim of this study was to understand the lived experiences of paramedics from one ambulance service trust in the UK

when attending to children and how these experiences influenced their decision making and provision of care.

Methodology

This original research study has utilised the consolidated criteria for reporting qualitative research (COREQ). This framework was developed to provide a complete checklist for the reports of qualitative studies (Tong, Sainsbury and Craig, 2007) which has been approved by the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) network. This study was initially undertaken as part of a post graduate academic qualification.

Research team and reflexivity

Qualitative interviews of paramedics to explore their experiences of decision making managing paediatric emergencies were conducted by a single male researcher who is also the author. Prior to interview five of the participants were known to the researcher. After expressing interest each participant received a participant information sheet and consent form detailing the aims of the study and what was asked of them. Before interviews commenced the researcher outlined his current role and interest in the subject matter and provided the participants with the opportunity to ask questions prior to obtaining their informed consent to take part in the study.

Study Design

With a desire to understand the lived experiences of paramedics and how those experiences made paramedics feel, a phenomenological approach was employed, as it was not desirable to block out similar experiences (Griffiths and Mooney, 2012) or preconceptions experienced by the researcher as a result of his own paramedic background.

Sampling

Volunteers from an advertisement in a weekly Trust information bulletin secured an initial sample. Recommendation from volunteer participants to colleagues lent to further snowball sampling to provide the remainder participants. A total of fifteen participants were selected and agreed to the interviews with no withdrawals at any stage.

Setting

Three interviews were carried out at the participant's workplace with the remaining twelve interviews completed remotely. Interviews in the work place were all held in a private room with only the researcher and the participant present whilst adhering to social distance guidelines. For remote interviews, participants and the interviewer chose their own private location at their own discretion.

The fifteen participants recruited demonstrated varying degrees of experience and education. All participants are Health and Care Professional Council (HCPC) registered paramedics as detailed in Table 1, which also profiles demographic data.

Table 1. Participant Demographics

Participant	Total length of service (emergency response)	Length of time qualified as a Paramedic	Initial qualification gained to achieve registration	Further education in HEI related to paramedicine since qualification	Gender
1	2 years 10 months	2 years 10 months	DipHe	BSc	F
2	12 years	2 years 10 months	DipHe	None	M
3	2 years 10 months	2 years 10 months	DipHe	None	M
4	11 years	11 years	DipHe	BSc	M
5	11 years 6 months	8 years	DipHe	Currently engaged at BSc level	M
6	11 years	3 years	DipHe	BSc	F
7	13 years	12 years	BSc	MSc	F
8	26 years	24 years	IHCD	DipHe	M
9	16 years	4 years	DipHe	None	F
10	20 years	3 years	DipHe	None	F
11	11 years	3 years 10 months	DipHe	BSc	F
12	7 years	1 year 6 months	DipHe	None	M
13	17 years	1 year 6 months	DipHe	None	F
14	15 years 10 months	10 years	DipHe	None	M
15	25 years 6 months	23 years 6 months	IHCD	DipHe. BSc MSc	F

Key: **IHCD**= Institute of Healthcare and Development **DipHe**= Diploma of Higher education

BSc= Bachelor of Science **MSc**= Master of Science

The inclusion and exclusion criteria for participation are demonstrated in Table 2.

Table 2 Inclusion and exclusion criteria for study sample	
Inclusion criteria	Exclusion criteria
Health and Care Professions Council registered paramedic	Paramedics providing telephone triage only.
Attended an emergency call to a patient age fifteen or younger	Clinical decision making by Paramedics working in another environment other than the ambulance service will be excluded
Attended the call within the last month prior to planned interview	

Data Collection

Five questions (Appendix 1) asked formed the basis of a semi-structured approach. Salient points noted during recording were utilised as prompts to ask further questions. This provided the opportunity for individual emerging themes to be further expanded upon (Griffiths and Mooney, 2012). This flexible approach is most appropriate when the researcher is also conducting the interviews (Robson and McCartan, 2018). No pilot interviews were completed prior to commencement of the research as a result of time constraints. Audio of all interviews was digitally recorded and transcribed verbatim, with no requirement for repeat interviews. Anonymity was ensured with the allocation of participant codes as detailed in Table 1.

Interviews had no set time limit, lasting between eighteen and fifty-six minutes, allowing participants to talk freely about their experiences. Accordingly saturation was not appropriate (Marshall and Long, 2010) due to adoption of a narrative approach. Vigilance by the researcher ensured participants maintained course of the subject matter. There was no re-contact with participants for interview transcript review. Transcription of all interviews was undertaken by a medical secretary who had previous experience of transcribing interviews.

Analysis and Findings

Coding was exclusively conducted by the researcher aside from one interview. A consultant nurse, neutral to the study with previous qualitative research experience coded one interview selected at random. Findings between the two data coders in this instance were similar. This approach may not be considered optimum, although Richards (2015) cautions against the reliability of inter-coding.

Data was coded and analysed using thematic analysis. Specifically the Braun and Clarke (2006) model was employed to search across the data set to identify patterns. This six phase approach to analysis (table three), is not a linear process progressing through each phase chronologically. Rather it is recursive, allowing the researcher to move back and forth through the phases as required.

Table 3. Braun and Clarke's six phases of thematic analysis	
1.	Familiarising yourself with the data
2.	Generating initial codes
3.	Searching for themes
4.	Reviewing themes
5.	Defining and naming themes
6.	Producing the report

Conduction of the interviews was the first true stage of familiarisation. Subsequently listening to the data and repeated reading of the verbatim transcriptions ensured an immersive process. Observations of experiences were listed and documented specific to each participant. This process provided the basis of codes.

Identification of patterns and grouping together commonalities of these codes formed the first basis of themes (Saldana, 2016) which were then reviewed and refined. Discarding of codes due to a lack of repetition contributed to providing a definitive data set into which themes could then be named. Themes were further assembled into sub themes, identified by Braun and Wilkinson (2003), as being useful for structure and hierarchy. No software was employed in the coding of the data. The lived experiences of participants presented as a descriptive analysis, supported by anonymised verbatim quotations from the reflective experience form the final production of the report.

Results

Five themes were identified from the thematic data analysis of the qualitative interviews:

(i) Education and Training

(ii) Exposure, Experience and Confidence

(iii) Emotion and Social Circumstances

(iv) Equipment and Protocols

(v) Provision of care

(i) Education and Training

Education and training featured heavily in responses from all participants and produced three sub-themes:

Registrant level education and training

Although registrant level of education was variable between participants, education central to paediatrics was considered to be lacking:

> GM5- " Through the paramedic course I don't feel we got trained enough on the paediatric side. I think it was just aimed more at adults (…) we need a little bit more training I think."

> GM1- " I don't think we have been given the training and the tools to fully assess a child."

Education primarily prepared participants for attending to paediatric patients presenting in peri- arrest or cardiac/ respiratory arrests. There was little training for low acuity ailments or conditions more common to paediatric patients:

> C&M4- "Most of the training I received around paediatrics was primarily around cardiac arrest and resus. We weren't really educated much in the assessment of minor injuries and illnesses. Most of the scenarios were all geared around critically ill kids."

> GM4- "My recollection of university really was predominantly, with paediatrics, was just about paediatric BLS and ALS. There may only have been an afternoon session or two about paediatric illness. Certainly never anything about how to deal with families; and how to talk with children."

Complimentary practice placements are common practice within paramedic education, experiences were largely negative:

> GM4- "Awful (…) In terms of accommodating our job role and our learning needs it was two days with not much real structure."

> GM6 "I was told at the beginning do not approach paediatric theatre. He [the anaesthetist] doesn't want you in the room, he doesn't want to see you."

Mandatory training

Discussion of mandatory training experience broadly reflected the experience of registrant level of education experience for most participants:

> C&M4- "It was more resus and kind of, maybe, airway management of kids, it was nothing to do with things that weren't critical. The kind of injuries or illness that parents worry about, rashes and weird things like that, you don't really get much insight to that kind of thing really."

Continuing Professional Development (CPD)

The importance of CPD as a HCPC (2018) registrant requirement was recognised:

> GM7 - "I didn't realise how much I'd forgotten until I done something like that [CPD]."

GM3 “I try and keep up with stuff, I’m on spotting the sick child and 2 paeds in a pod. I try to keep up to date with things.” “ It’s very much up to you to go and keep yourself current.”

(ii) Exposure, Experience and Confidence.

Confidence (or lack of) appears to stem from experience for most. This experience can be gained from exposure in a professional and personal capacity:

C&L3- “ I think confidence can be underpinned with frequency of exposure (…) If you’re assessing paediatric cases every day I think you become more proficient.”

GM2- “ I’ve never done that, I wouldn’t be confident cannulating a toddler. I’ve never actually cannulated a child to be fair.”

This lack of confidence in performing interventions led GM3 to comment on the impact this could have on quality of care:

“Would you want Ibuprofen if a car had just run over your leg? Seriously? (…) People are scared of cannulating kids or trying to (…) I think we are poor at managing children’s pain.”

The impact of differing family dynamics is highlighted in these observations of two participants:

C&M4- “Kids can be quite scary in this job, if you haven’t got kids yourself, it’s a bit of an unknown quantity.”

C&M5 “As a learning experiences, both of my kids became poorly which directly influenced how I managed my patients.”

(iii) Emotion and Social Circumstances.

Participants discussed the impact of their emotions on their decision making. The term “gut feeling” was prevalent in decision making:

GM2- “Gut feeling and I would rather air on the side of caution.”

C&M5- “It’s that subconscious gut feeling , particularly in paeds that I find is a massive driver in decision making as much as your pathways are.”

Nervousness and risk also drove decision making:

C&M3- “With children you are always a bit more nervous and a bit more airing on the side of caution.”

C&L3- To sum it up, my appetite for risk when dealing with and treating a child is an awful lot lower than my appetite for risk when dealing with adults.”

The phrase “gut feeling” was observed from the family perspective also:

> GM2- “You don’t want them to panic just because you are there.”
>
> C&L3- “ I take into consideration the parents’ feelings.”
>
> C&M1- “If they are saying something is not right then you should probably trust what they are saying.”

(iv) Equipment and Protocols.

Joint Royal College Ambulance Committee (JRCALC) produce national clinical practice guidelines for paramedics which are based on best available evidence. These guidelines are mainly in reference to acute, severe and life threatening emergencies:

> C&L1 “For example an allergic reaction or cardiac arrest, I would definitely be checking the drug dosages and things like that to make sure I was prepared.”

Local procedures such as the application of Manchester Triage System (MTS) have been developed. MTS is a tool for clinicians to use to aid decision making. GM2 commented:

> “ So for medical under two years we have to take them to ED (…) It has it’s advantages and disadvantages and on occasion you are glad it is in place because you don’t have to commit [to making a decision].”

Whilst GM3 acknowledged the restrictions of guidelines, her opinion on the application of them differed:

> “We are restricted by MTS if you follow it to the age limit (…) if I am honest I don’t always follow it if I think there is a more sensible route I will follow what I think. I’ll never just leave at home (...) I would always refer on.”

The ability to perform clinical assessments of children was a topic discussed by many with C&M1 highlighting advantages for clinicians outside of the ambulance service:

> “ I think they can do a bit more than us like looking in ears, back of the throats properly, stuff like that.”

(v) Provision of care

Following clinical assessment a decision surrounding provision of care is required. For many there was an expectation, from families, an ambulance attendance would result in transport of patients to hospital:

> C&M4- “ I think parents feel like they want to go to hospital (…) they want definitive answers from definitive people. They may not trust the word of an ambulance man.”

> C&M2 " I feel that the general public perception is, if we turn up for their child they expect to go to hospital."

Ambulance culture may have contributed to this expectation:

> C&L1 " I feel that there is a culture that we will err on the side of caution, historically all children have gone to A&E."

Alternatives to hospital are available, but C&L2 acknowledged for referral to community services, you had to be confident:

> " You have to be really in confident in that decision (…) to discuss an alternative treatment pathway."

When this confidence was present, clinicians experienced a mixed but largely negative experience:

> C&L3- " As regards referrals with kids I have found that other primary carers, GPs, are very risk averse (…) extremely risk averse. I think it's pretty much always been a conveyance outcome."

GM7 highlighted this experience was related to provider:

> " We've got two out of hours providers. M is compliant and as brilliant as you'd ever want. G it's like banging your head against a brick wall. It's a postcode lottery."

Leaving a patient at home was a less popular option:

> C&M1- "I think it's quite hard to leave any child at home especially with the rules around the [under] two years [old]. (…) I, because of his age, wouldn't feel comfortable leaving him at home."

GM5 agreed with C&M1 but acknowledged it had a potentially damaging impact:

> " You could also just give the Mum and Dad the ownership back to take keep an eye on their own child and I think we take that away from them a lot. That makes the parents question their ability as to what they can manage."

Discussion

With the study of paramedic practice and it's evolvement being in it's infancy (Givati, Markham and Street, 2018) ,the search for evidence will provide a current challenge for researchers. Registrant level education has developed dramatically (College of Paramedic (CoP), 2019), transitioning from in house training of IHCD qualification to higher education institutes (HEI). All participants were in agreement of the importance of paramedic education to feature resuscitation and life-saving treatments. Education for paramedics is primarily focused on this form of emergency medicine (O'Meara, Furness and Gleeson, 2017). For

participants this was a small portion of actual work. In addition to this necessary training, a desire for specific paediatric education more reflective of primary care presentations and age specific was expressed.

Brady (2018) discusses confidence, noting there is little research of paramedic confidence in clinical practice available. Lack of exposure and confidence were found to be directly linked during focus groups from Brady's (2018) research. Experience was a key factor for many paramedics. A link between experience and confidence, which O'Connor and Leonard (2014) recognise as an important factor when working in child health and social care, was evident. Participants observed confidence could impact on quality of care. Various authors (McIntosh-Scott et al, 2013; Hayes, 2003.) have also commented on this link between confidence and patient outcome.

Exposure in a professional capacity is difficult to control as paramedics generally do not have control over which incidents they will respond to. Exposure in a personal capacity will be dependent on family dynamics, although parenthood itself should not be considered as the only exposure to children as extended families may also contribute.

Roland and Matheson (2012) found clinicians with the necessary experience in assessing children do not tend to rely on guidelines or tests to make decisions. Conversely all participants of this study relied on guidelines for severely unwell children and those in cardiac arrest regardless of experience. Decision tools in paediatrics are seldom as sensitive and specific as we would desire (Roland and Snelson, 2019). Accuracy of gut feeling in clinical decision making is variable but shows potential for identifying sick children when compared with individual clinical features (Van den Bruel et al, 2010). Gut feeling of both clinicians and family members featured as a factor when considering emotion.

Paramedics with additional training displayed improved rates of non-conveyance. (O Cathain et al 2018). Participants who engaged more in additional training were more likely to refer to community services. The ability to perform referral was impacted by availability and suitability within the area and the constrictions of guidelines. A desire to err on the side of caution was observed.

Limitations

This study is limited as the data was taken from one ambulance service and as such cannot reflect the experiences of all paramedics although literature does support the themes identified. Regardless, the aim was to explore lived experiences and as such the findings of the study are presented for the reader.

Conclusions

Education and training is a critical factor in decision making. As well as training for life threatening emergencies, broadening of paediatric education would be welcome. The HCPC

(2018) has raised the threshold for entry to the register from Certificate to a full Honours Degree from 1st of September 2021. HEIs in conjunction with the CoP, could take advantage of an opportunity to introduce a paediatric specific module with a focus lent to subject areas such as communication and lower acuity, paediatric specific conditions. To compliment additional education, adoption or development of national guidelines for lower acuity complaints would further equip paramedics with a robust process for decision making. When developing pathways and education, consideration should be given to colleagues who are younger or less experienced.

Ambulance services should investigate the prospect of developing paediatric specialist practitioners within their workforce. Creation of specialists who primarily respond to paediatric patients should contribute to negate factors identified surrounding exposure, experience and confidence. It is acknowledged this would not be a wholesale resolution for all paramedics. Support from a specialist workforce for education and decision making would further equip Trusts to empower the wider workforce. Development of a national network of paediatric specialists within UK Ambulance services could enable Trusts to support each other in development, sharing learning and resources.

Improved patient experience as patients access the most appropriate level of care would be in line with the vision to make every contact count (HEE, 2020). Community services and parental empowerment will be integral to any future success and will possibly be more difficult to influence. ED attendances for children since the start of the Covid-19 pandemic were down approximately 30% and increasing (Isba et al, 2020). Covid-19 witnessed a change in approach to healthcare. Early lessons learnt may provide the opportunity to capitalise on this change safely.

The Long term plan (NHS, 2019) recognises the importance of research and innovation for medical advancement. Considering the paucity of literature in paramedicine, never has a statement felt more apt. Further research focused on specific areas of pre-hospital paediatric health care and paramedic experience would enhance understanding of paramedic behaviour and provide an evidence base to drive innovation forward. Service evaluation of the impact of specialist paediatric roles could provide a template for replication for other specialties such as frailty, maternity or mental health.

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Conflict of Interest

None.

Ethical Approval

Participants received information sheets pertaining to the study and involvement prior to interviews being undertaken. Approval was received from participants at the beginning of the interviews. Organisational approval for the study was achieved via the research team. Ethical approval for the study was received from Liverpool John Moores University (LJMU) ethics committee.

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