KING'S COLLEGE LONDON

Providing Augmentative and Alternative Communication Training to the Paediatric Dental Team

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Declaration

I declare that this is my own work and that all the sources that I have used or quoted have been acknowledged by means of complete references. This work has not been submitted in part or in full, for the degree of masters this or any other university or examination board.

Abstract

Background: Approximately one percent of five-year-old children in England have complex and severe speech, language and communication needs. These children will often need to use Augmentative and Alternative Communication (AAC). Communication is a complex system by which people exchange and convey messages; this involves sending, receiving and interpreting messages. Verbal Communication plays an important role in the interaction between the dentist and the dental team and the child; effective communication can reduce dental fear and enhance cooperation. Even though AAC offers the potential for the children with complex communication needs to have improved interaction during the dental visit paediatric dentists do not routinely receive training.

Aims: This study aimed to teach paediatric dentists and the paediatric team a means of engaging better with children who have complex communication needs.

To achieve this, firstly a training programme was developed. This was based on the current learning theory. The training included a brief presentation followed by an interactive seminar.

The efficacy of the training programme was measured using pre and post training questionnaires. Since it is known that training has to be sustained, a follow-up questionnaire was re-administered five-months later.

Methods: Fifteen participants from the paediatric dental department at King's College London based at Guy's Hospital took part in this training session. The participants

answered a questionnaire, which assessed and evaluated their initial knowledge about AAC and improvement following the training. The questionnaire included open and closed questions and Visual Analogue Scales.

Results: There was a significant improvement in the participants' awareness of ACC (t-Test: p= 0.01) but there was a regression in the improvement five months following the training session. However, participants showed enthusiasm for attending future ACC training courses throughout the study.

Conclusion: The initial level of knowledge of ACC was poor. The training did improve the participants' awareness of the communication needs of these children and increased their confidence towards communicating with them but this was not sustained at the five months follow-up. It is likely that many of the responses from the participants changed partly due to their own learning and development as the time progressed since many were postgraduate students. However, participants became more aware of several types of AAC, particularly showed more interest in MAKATON, as a result of this study.

Moreover, this study highlighted the need for future the regular and formal training session that are more dentally oriented and executed by qualified trainers.

Dedication

I dedicate this project to my family especially my beloved parents for their constant inspiration and supporting me each step of the way.

Acknowledgments

This research project would not have been possible without the support of many people. I wish to express my sincere gratitude to Prof. Marie Therese Hosey, Dr. Catherine Williams and Lizzie Nash for their guidance, help and support throughout this study. My special thanks to all my colleagues for offering their time and kind co-operation in taking part in this study.

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Chapter 1

1 Introduction

This project focuses on training the paediatric dental team to develop their awareness in communicating with children with communication difficulties for and evaluating it's the effect.

As a paediatric dental team we have some training and experience of delivering specialised behavioural management techniques. This is even more important when we should communicate with children with special needs and particularly those with communication difficulties. Augmentative and Alternative Communication (AAC) aids can be used when there is speech or communication impairment. Their use can reduce the stress and the frustration of not being able to communicate. People with communication difficulties may rely on AAC systems to enable them to communicate messages by augmenting speech or by using speech alternatives such as photographs, coloured pictures, or line drawings.

For the purpose of this study, a training session was developed that included a PowerPoint presentation and a practical session in conjunction with the educational theory.

Furthermore, the effect of this project was evaluated for both the immediate and the long-term effect.

Chapter 2

2 Literature review

2.1 Communication

2.1.1 Definition of communication

Communication is a complex system by which people exchange and convey messages; this involves sending, receiving and interpreting messages (Schindler *et al.* 2010). These messages vary in their degree of sophistication; ranging from extremely simple to extremely complex messages (Schindler *et al.* 2010).

Communication entitles all aspects of interpersonal communication; verbal understanding, expressive language, speech, literacy and other means of interaction in a public domain (Scottish Executive Social Research 2007).

Communication is carried out according to a desire or need. It is a circular pattern of behaviour between individuals rather than a linear one; it involves sending messages and receiving feedback (Schindler *et al.* 2010).

The World Health Organization (WHO) International Classification of Functioning, Disability and Health (ICF) classifies communication into three categories:

1. Receiving communication
2. Producing communication
3. Conversation and the use of communication devices and techniques.

The International Classification of Functioning, Disability and Health also define the components of health and some health-related components of well-being. Both receiving and producing communication involve verbal (spoken) messages and non-verbal messages.

Communication consists of seven percent words (verbal), 33 % tone of voice and 60 % body language (non-verbal) (Dougall & Fiske 2008).

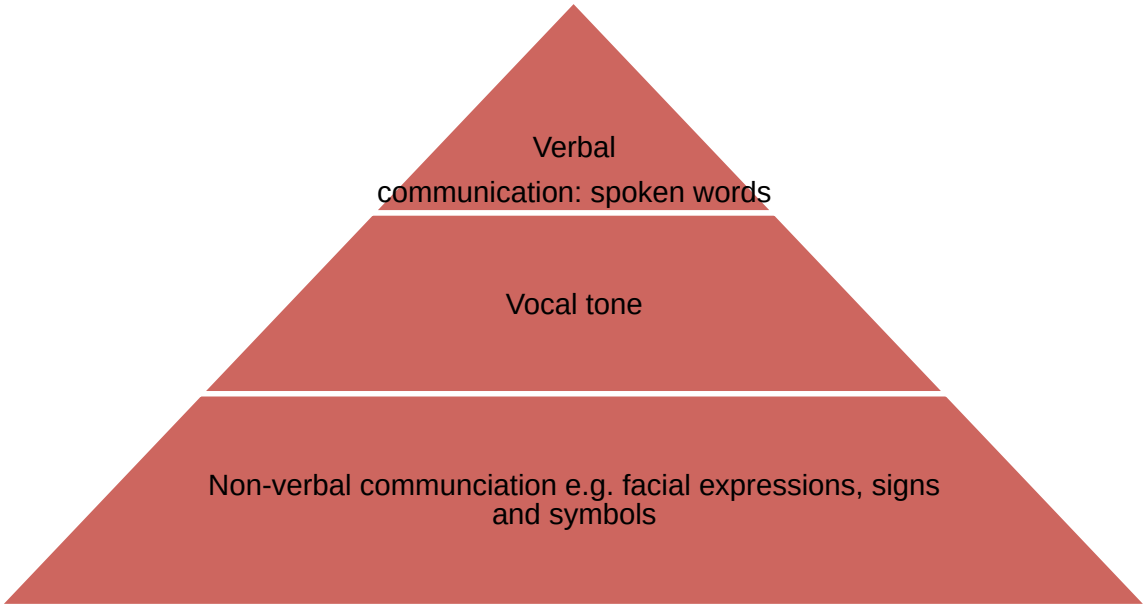


Figure 2.1 Communication elements

2.1.2 Communication disorders and complex communication needs

A communication disorder is the impairment in sending and/or receiving a message. This could be as a consequence of: a disease, a treatment or an environmental situation (Schindler *et al.* 2010).

The prevalence of people with marked communication needs is estimated to be 1-2% of the population (Scottish Executive Social Research 2007).

2.1.3 Communication and healthcare

The Knowledge of the healthcare staff and their understanding of complex communication needs are limited; some may interpret communication difficulty as a sign of intellectual impairment.

Accurate diagnosis and effective treatment may be compromised by poor communication between healthcare team and individuals with communication difficulties.

Healthcare services are failing to meet the needs of this group of patients; it would be beneficial for the healthcare staff to have communication training which promotes awareness and understanding of the needs of these patients (Scottish Executive Social Research 2007).

2.1.4 Communication and dentistry

Individuals with special care needs are at increased risk for oral diseases due to their mental, developmental, or physical disabilities which may render them unable to understand and cooperate with preventive oral health practices making them at increased risk of oral diseases. In addition they also face barriers for obtaining oral health care; communication with the dental staff being one important factor (AAPD Reference Manual 10/11).

Moreover, dental procedures can elicit fear and anxiety. The younger children, who lack coping experience and ability to postpone rewards, are more prone to dental fear. Communication plays an important role in the interaction between the dentist and the dental team and the child; effective communication can reduce dental fear and enhance cooperation. A study by Sarnat *et al.* (2000) showed that verbal communication is important in reducing fear and in achieving more cooperation and patient satisfaction; empathic approaches, giving sensory information, giving instructions and feelings of control and assertiveness were strongly related to anxiety and cooperation. Although the study didn't examine the effect of verbal communication strategies on children with complex difficulties nor the role non-verbal communication; it shows the general importance of communication in paediatric dentistry and how it's an essential factor in improving cooperation and reducing dental fear.

In order to have an effective communication between the dental team and the patient, it is important to consider the communication skills of both the patient and the dental team

i.e. the dentist and the nurse. A systemic review was carried out by Finke *et al.* (2008) regarding communication between nurses and patients with complex communication. Nurses, patients and the caregivers recommended in this review that nurses should receive training about AAC and the implications of severe communication impairment.

Several studies have reported that carers and professionals often use methods of communication that do not meet the person's communication needs. This is due to unmet training needs. Moreover, it has been demonstrated the training interventions are effective in improving the quality of communication with adults with learning difficulties and that the carer communication efficacy increases after taking part in communication training (Kyle *et al.* 2009).

A case study about AAC training programs for Palestinian Arab teachers indicated that the training program enhanced the knowledge, practice, attitudes and awareness of special education teachers towards AAC (Patel & Khamis-Dakwar 2005).

Alsmark *et al.* (2007) recommended for dentists to attend a sign language course to enable them to use at least the basic structure and simple gestures and signs as well as the sign language alphabet to facilitate effective communication between the dentists and the hearing-impaired patients. The use of facial and body language expressions was also proposed to be of crucial importance. Moreover, Champion and Holt (2000) suggested that removing masks while talking, reducing background noise and learning to use simple signs might improve communication with hearing-impaired children.

The British sign language (BSL) is the language of Britain's deaf community; it is British, it is a visual language created by a community of people who cannot hear spoken language under normal conditions, and it is used by as identifiable social language community. However, it should be noted that BSL is an independent language, distinct from English and therefore is considered a language by its own right (Sutton-Spence and Woll 2005).

Communication is an essential part of our dental practice and many studies have showed the impact of training on improving effective communication between people with communication difficulties and their communicating partner (e.g. Parent, carer, teacher, friends or medical professionals). Therefore, this project will aim to assess the knowledge of the dental team in AAC before and after a training session.

2.2 Augmentative and Alternative Communication (AAC)

2.2.1 Definition of AAC

Children may not develop speech and language skills as they are expected to due to motor, language, cognitive, and/or sensory impairments. Augmentative and Alternative Communication offers the potential for the children with complex communication needs to have access for communication. It consists of several methods and technologies that supplement spoken communication for people with complex communication need either

due to limited speech or language skills. The American Speech Language-Hearing Association states “AAC involves attempts to study and, when necessary, temporarily or permanently compensate for the impairments, activity limitations, and participation restrictions of individuals with severe disorders of speech-language production and/or comprehension “(ASHA 2005).

Augmentative and Alternative Communication consists of unaided and low technology and high technology aided communication systems. Several studies reported that AAC is used as a multimodal communication system in which different communication methods are used together (Lund & Light 2007; Smith 1994). Users of AAC are able to use different modes and types of AAC simultaneously thus reflecting their different communication needs. The communication mode choice is influenced by conversational factors (Smith 1994).

2.2.2 AAC users

Alternative and augmentative communication systems may be used by individuals who have communication difficulties due to congenital conditions such as learning impairments, autistic spectrum disorder, and cerebral palsy or due to acquired communication difficulty following for example dementia, stroke, motor neurone disease or any other neurological condition .It can also be used by individuals with temporary

loss of communication e.g. tracheostomy or within intensive care wards (**www.scotland.gov.uk**).

2.2.3 Prevalence

There are no precise data about the prevalence of people with communication difficulties who use AAC in the United Kingdom. However, the Royal College of Speech and Language Therapists (RCSLT) estimated that between 0.3% and 1.4% of the total population require the use of AAC systems although this is reported to be a conservative estimate.

2.3 Importance of AAC

A survey conducted by Angelo (2000) to determine the impact of using AAC devices on families showed that the parents reported better communication with their child. Moreover, the child consequently related better with professionals, peers and extended family. Although the sample that was included in the study did not represent the entire population, it might provide some insight into the family's perspective on AAC.

Furthermore, mothers in another survey indicated that priority should be given to integrating assistive devices into the community and developing both awareness and

support for users, as well as finding trained professionals to work with their children (Angelo *et al.* 1995).

Lack of awareness in the nature and implications of disability was reported by a study investigating the perceptions of general practice (GP) staff and people with communication disability. Furthermore, they were unaware of the number of people with communication disabilities attending their surgeries.

Doctors often experience difficulties in communicating with people with communication disabilities and use few strategies, and mostly tend to rely on carers for communication; there is over-dependence on carers to report symptoms and perceptions of these patients (Scottish Executive Social Research 2007).

Moreover, staff acknowledged benefiting from future training and welcomed the use of simple and visual resources. Time was the main obstacle to training (Murphy 2006).

On the other hand, in the same study; patients suggested that the use of pictures and written signs, the doctor speaking slowly and clearly and better-trained staff would be helpful.

The study by Murphy (2006) highlighted the need to alter the communication environment by increasing the knowledge of GP staff on communication strategies and communication disabilities. It also pointed to the importance of the speech and language therapy's role in liaising with the GP staff to raise awareness in communication difficulties and improving communication.

2.3.1 Unaided Augmentative and alternative communication

Unaided AAC is when the communication mode used doesn't require the use of an external supporting material or device. This includes signing and the use of gestures. Unaided AAC needs minimal resources and requires little digit control is sufficient, e.g. signing or gesturing (Wilkinson & Henning 2007).

Gestures include facial expressions, body postures, eye gaze and mime-like movements. Signing is more sophisticated and requires continual training. Furthermore, signing may not be accessible to AAC users with physical and/or neurological disabilities (CALL 1998).

A study by Smith (1994) showed that participants used unaided communication for initiating conversations. The unaided modes were a mixture of vocalistaion, gesture, and speech, either used alone or in combination. Whereas, aided communication system accounted for a small proportion of the participant's communication and interaction (Smith 1994).

2.3.1.1 MAKATON

MAKATON was developed in the 1970's by Margaret Walker to help people with learning disability to communicate.

It is now recognised internationally as a communication programme, used in more than 40 countries worldwide (www.makaton.org).

It is designed to provide a means of teaching about 350 signs from British Sign Language (BSL) to children and adults with mental impairment or language impairment. It provides a basic means of communication that encourages expressive speech wherever possible (Walker & Armfield 1981).

The MAKATON Vocabulary began in 1972 in Surrey. The 1976 Revised Makaton is widely used now with (Walker & Armfield 1981):

- Mentally impaired deaf and non-deaf children and adults who have little or no expressive speech and poor comprehension
- Children and adults who are both mentally and physically handicapped
- Individuals with autistic spectrum
- Some young deaf children in the ordinary range of intelligence
- Children with severe articulation or speech rhythm problems who need a temporary alternative
- Certain normal adults with acquired communication problems.

MAKATON uses speech, facial expression, eye contact and body language, together with a sign (gesture) and/or symbol (picture). It is a language programme, which is based on a selected list of everyday words.

However MAKATON is not only limited to those with communication difficulties; but also everyone else who shares their lives will need to use it. This includes teachers, social workers, and health professionals.

2.3.2 Aided Augmentative and alternative communication

This includes systems that require equipment such as books, charts, computers or Voice Output Communication Aids (VOCA) such as BigMack device. Aided AAC involves either simple low-tech systems or highly sophisticated high tech electronic systems.

Parents and teachers in the aforementioned study by Smith (1994) perceived the aid as an essential part of communication. Furthermore, they suggested that aided communication constitutes a small part yet a vital one in multimodal communication system.

Children with complex communication needs may use a variety of methods for communication with others on a daily basis; a single system is unlikely to meet the needs of children with complex communications in their daily interactions.

The effectiveness of the systems used is determined by interactions between intrinsic factors related to the child and extrinsic factors such as communication partners and social environment (Light & Drager 2007). However, symbol charts and books are an inexpensive mode for communication that is frequently perceived by parents as a successful method of augmentative communication (Ko *et al* 1998).

Aided communication systems offer AAC users flexibility and richness in communication by enabling them to create and customise their own vocabulary sets (CALL 1998). Moreover, it offers the users by a wider range of ideas and functions, compared to the limited range of unaided system. (Lund & Light 2007).

Many of the aided systems are established on simple pictures and symbols. Therefore, a wide range of users; non-readers, very young children, and individuals with severe intellectual and sensory disabilities can use aided communication systems.

On the other hand, the equipment itself in this system acts as a disadvantage. The user has to remember to carry equipment; it could be left behind, lost or broken. In addition, It may also often be expensive and bulky (CALL 1998).

2.3.2.1 Low-technology communication systems

Equipment used in low-tech systems does not involve electricity or electronics (CALL 1998); it includes tangible symbols, alphabet boards, symbol-based topic boards, communication boards, communication passports and communication programs such as the Picture Exchange Communication Program (PECS). Low-technology systems are not inferior to high-technology systems; they provide the AAC users with simple, quick and highly flexible methods of communication. Moreover, it involves active interaction of both the user and their communication partner (CALL 1998).

2.3.2.1.1 Widgit symbols

Symbols are used to support text and also they provide visual illustration of ideas or thoughts making their understanding easier and clearer.

Symbol Sets are comprehensive collections of images that often follow a schematic arrangement, which helps the reader independently develop their own vocabulary.

Widgit Symbol Set was developed over the past 25 years and now contains more than 11,000 symbols covering over 40,000 words of the English vocabulary.

The symbols are simply drawn and colourful. They provide a clear and concise illustration of a single concept.

Moreover, they cover a broad range of topics and therefore are suitable for symbol users of all ages and abilities.

2.3.2.1.2 Communication Passports

An example of low technology communication system is Communication Passports. These provide a practical and child-centered way for presenting key information about the child (Millar & Caldwell 1997). They were first developed by the CALL Centre (Communication Aids for Language and Learning). Children with complex communication difficulties are presented positively as individuals thus supporting them.

Passports display the key information about the child in an accessible, clear, simple, detailed and specific way. In addition, it describes the child's most effective means of communication (Millar & Caldwell 1997).

2.3.2.1.3 PECS

Pyramid Educational Consultants developed the Picture Exchange Communication system. It provides an opportunity to open the door to spontaneous communication for children and adults with a wide range of learning, speech and communication difficulties (Frost & Bondy 2002).

It uses pictures to develop communication skills; the system begins by teaching the users to use single pictures then they are taught to discriminate, or choose, between a variety of pictures and then to construct increasingly complex sentences. The pictures and sentence strip are all stored in a portable communication book (www.pecs.com).

2.3.2.2 High-technology communication systems

The equipment used in high tech communication aids is electronic and need a power supply; either battery supplied or mains powered (Jans and Clark 1998).

High tech aids are subcategorised into dedicated communication aids and computer based communication equipment.

2.4 Models of Disability

There are two models of disability these are:

i. The medical model and
ii. The social model.

Disability is usually explained through the “medical model” which perceives it as an individual problem that causes functional limitations. This has been criticised due to locating the disability within the individual rather than in the society (Oliver 1990).

On the other hand, the social model of disability perceives it as a problem caused due to barriers in the society without denying the individual problem of disability.

It is important that the dental team relate these models to their practice. By considering the social model of disability, they will be more aware of the social barriers that could exist in the dental environment during treatment of children with communication difficulties. Hence, it will improve their understanding to the importance of their knowledge and awareness about AAC.

In this study the dental team awareness of AAC is considered as part of the social barriers that could face individuals with communication needs. Therefore, our aim was to improve their knowledge and awareness about AAC through training.

2.4.1 The Medical Model of Disability

The medical model of disability explains the disability at an individual level. It describes the difficulties that people with impairments face as a consequence to how their bodies are shaped and experienced. It is associated with terms such as disorder, disease and impairment, therefore emphasising the pathological nature of the problem.

According to this model, WHO defines the impairment as “any loss or abnormality of psychological, physiological or anatomical structure or function” and the disability as “any restriction or lack, resulting from impairment, of ability to perform any activity in the manner or within the range considered normal for a human being”(SAIF 2009).

2.4.2 The Social Model of Disability

The social model of disability states “disability is caused by physical and social barriers where there is an unequal relationship within a society in which the needs of people with impairments are often given little or no consideration” (SAIF 2009, DRC 2007).

The environment has a great impact on people’s extent and experience of disability. Disability is created by inaccessible environments that are caused by barriers within the society; by being excluded from participation as a result of physical, organisational and attitudinal barriers (WHO 2011).

Equality of access to services for individuals with disabilities can be ensured by modifying existing ones as well as adding new services (DRC 2006).

The social models definition of impairment and disability is proposed by the Union of the Physically Impaired against Segregation; impairment defined as “lacking part or all of a limb, or having a defective limb, organ or mechanism of the body” and disability as “the disadvantage or restriction of activity caused by a contemporary social organisation which takes little or no account of people who have physical impairments and thus excludes them from participation in the mainstream of social activities.

Difficulties in effective communication can be regarded as one of the barriers that children with complex communication needs may face in their social life. This highlights the need to provide them with a better communication environment by providing access to AAC systems.

Guidance and regulations dealing with children with disabilities clearly states; that if a child has complex, communication difficulties or learning difficulties, then arrangements should be made to establish their views since cannot be assumed to be incapable of sharing in decision-making (Cavet & Sloper 2004).

Several studies have shown that disabled children can express their views about their care and treatment and that they want their views respected. Studies have also suggested that disabled children are not given their full rights in participation in decision making under the Children Act 1989 or under the UN Convention on the Rights of the Child. Moreover, the need for trained staff to promote disabled children’s participation in

decision-making as well as communication skills development for health professionals have been identified by several studies (Cavet & Sloper 2004).

2.5 Importance of training sessions

Teacher-training programs provide a means for developing skills, providing information, improving performance and nurturing attitudes that assist teachers to be more efficient at their work (Davis and Davis 1998).

A study was carried out by Khrais (2005) to identify the effect of a training program in modifying parental attitude towards their learning disabled children. This study revealed the modifying effect of this training program on the parental attitudes.

Furthermore, a training program constructed by AlZoubi and Abdel Rahman (2011) to measure its effects in improving instructional competencies for special education resource room teachers in Jordan showed significantly better performances of the experimental group teachers than of the control group in improving the personal and professional competencies.

Therefore, a training session was conducted as part of this study in which the knowledge of the participants can be developed and assessed. The training session was developed according to the learning theory in order to match the variable learning styles of individuals.

2.6 Learning modalities (how people learn)

There is diversity in types of learners and learning styles. In order to understand each different learning style, and to meet all the different needs and preferences of the participants in communication training, a brief description of the learning styles is discussed in the literature review.

2.6.1 Definition of learning style

A review by Hayes & Allison (1996) states the definitions of learning styles available. Learning style refers to individual differences in information processing. It is concerned with the form rather than the content of activity and relates to how people think, solve problems, learn and interrelate. Learning style is a consistent way of responding to, and using, stimuli in the context of learning. It is the way that people absorb or retain information.

Kolb (1984) described learning styles as possibility-processing structures rather than fixed personality traits. These learning styles are developed as unique individual process based on the flexible nature of the human learning.

2.6.2 Kolb's model of learning styles

Kolb (1984) defined learning as "a process whereby knowledge is created through the transformation of experience".

2.6.2.1 Assessing individual learning styles

Kolb (1984) created the Learning Style Inventory (LSI) for assessing the individual orientations toward learning. There are four modes for the learning process; LSI measures the person's relative emphasis on each of these modes. These four modes are presented as a four-stage cycle of learning as follows:

1. Concrete experience (CE): in this learning mode, the individual focuses in being involved in experiences and in dealing in a personal way with immediate human situations. This mode of learning emphasises on feelings as opposed to thinking. People with this orientation value being involved in real situations and relating to people.

2. Reflective observation (RO): it focuses on understanding the meaning of situations and ideas through observing them carefully and describing them. This mode emphasises on understanding as opposed to practical application. People

with this orientation depend on their feelings and thoughts for forming opinions and are good at looking at things from a different perspective.

3. Abstract conceptualisation (AC): focuses on the use of concepts, logic and ideas. It emphasises on thinking as opposed to feeling. Individuals with this orientation are good at systematic planning and quantitative analysis.

4. Active experimentation (AE): this orientation focuses on influencing people actively and changing situations. This mode focuses on practical applications as opposed to reflective understanding.

According Kolb's model, two processes are involved in comprehending the information and two processes involve transforming the experience into learning.

Therefore, the learning style preference is the product of two pairs of variables or choices that every individual make. Kolb presented these pairs as lines of axis, each with 'conflicting' modes at either end (Figure 2.2):

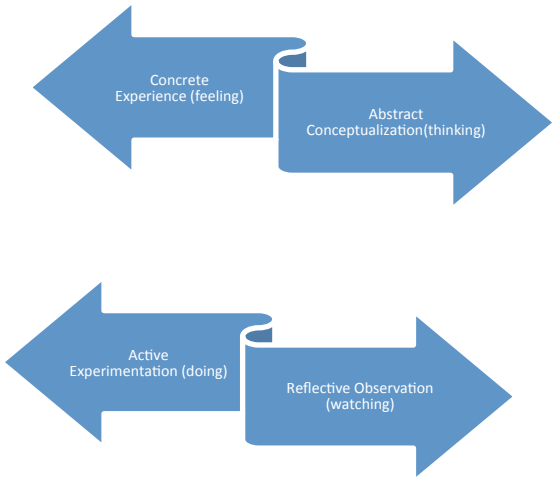


Figure 2.2 Learning modes

When these four processes are combined they result in four learning styles (Figure 2.3). Features for each one of these learning styles are based on clinical observation and research of the patterns of LSI:

1. Convergent: (abstract, active) - People with a Converging learning style are best at finding practical uses for ideas and solving problems; they like problem-solving and decision-making. They are more attracted to technical tasks and prefer it to interpersonal issues.

2. Divergent: (concrete, reflective) – people with this learning style tend to use the innovative and imaginative approach to doing things. They prefer to watch rather than do, they tend to gather information and use imagination to solve problems. They are best at viewing concrete situations several different viewpoints. They perform better in situations that require ideas-generation; they like brainstorming and prefer to work cooperative groups and to receive personal feedback.

3. Assimilation: (abstract, reflective) – people with this learning style like to reason inductively and logically and create models and theories. They like to design projects and experiments. These people require good clear explanation rather than practical opportunity. In formal learning situations, people with this style prefer readings, lectures, exploring analytical models, and having time to think things through.
4. Accommodative: (concrete, active) - they prefer 'hands-on' rather than logic; they use trial and error rather than thought and reflection. They tend to rely on

other people's analysis, and prefer to take a practical, experiential approach. They are attracted to new challenges and experiences, and to carrying out plans. People with an Accommodating learning style prefer to team working for completing tasks.

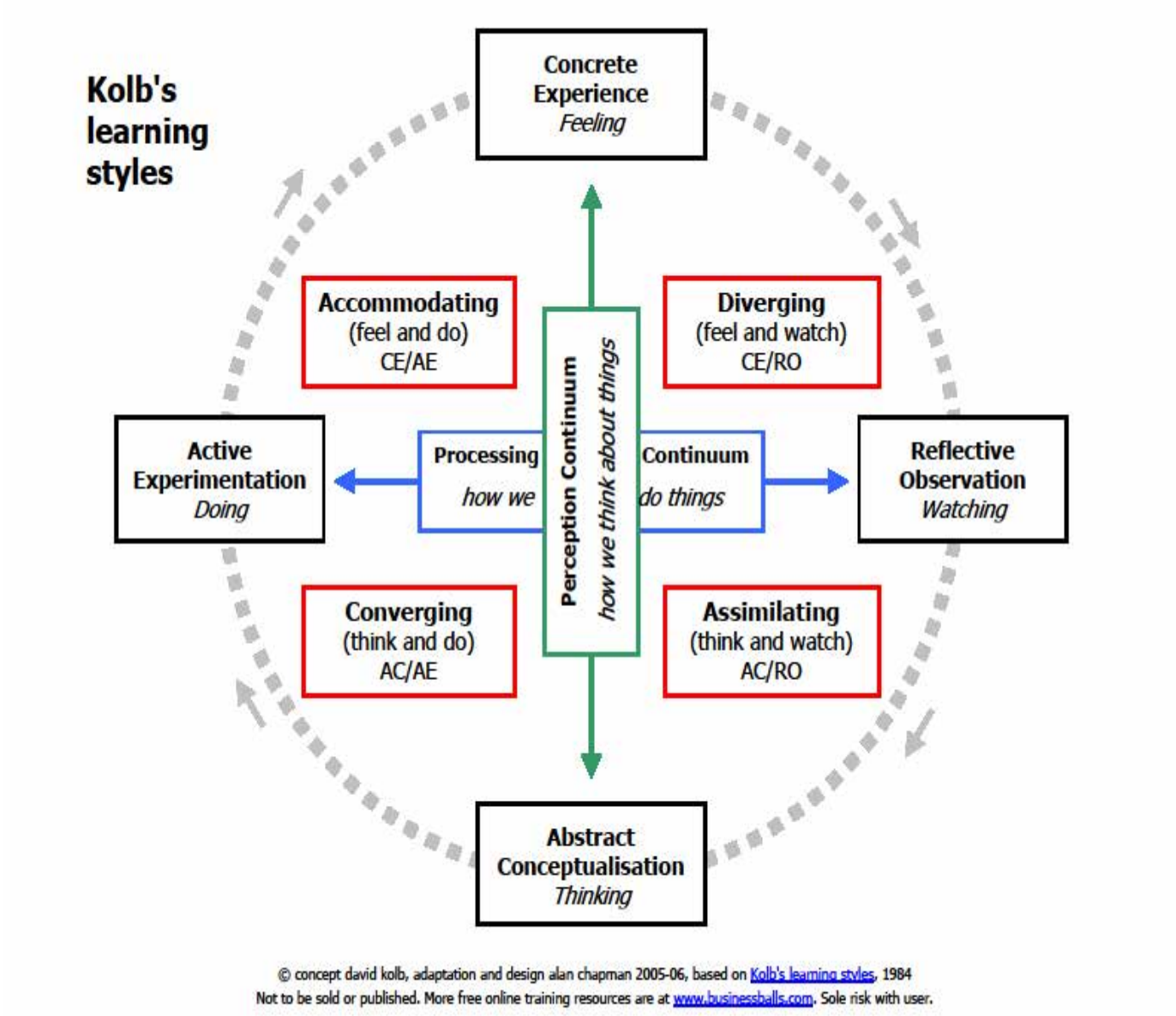


Figure 2.3 Kolb's learning styles

This model was applied on the training session that was conducted in this study; a participant would learn about AAC through the following (Table 2.1):

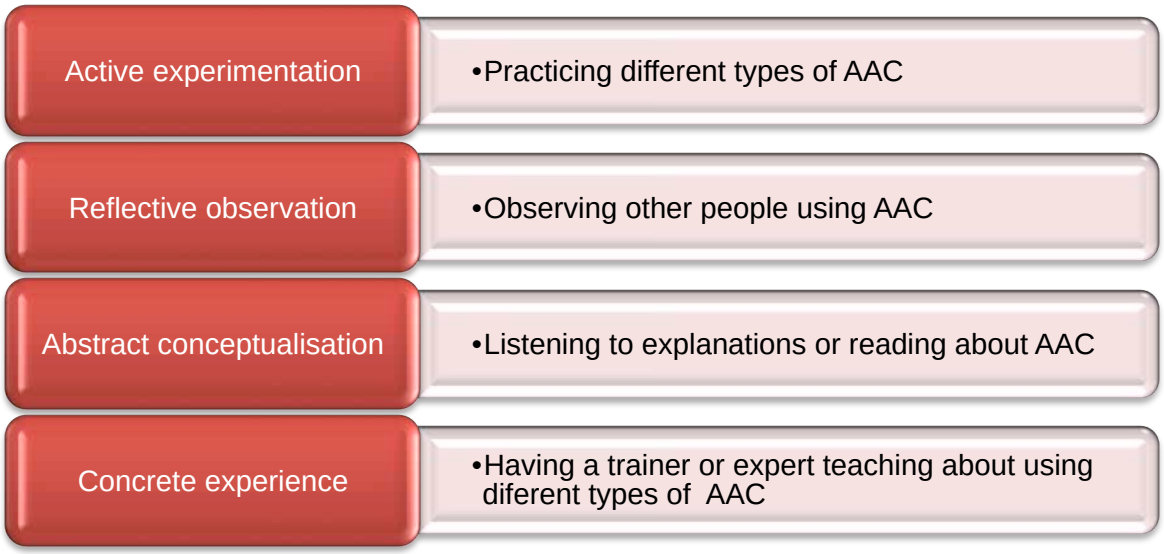


Table 2.1 learning modes in relation to the training session in this study

A study by Buch & Bartley (2002) investigated and explored the relationship between learning styles of participants (n=165) in a financial services institution and their preference for training delivery mode according to Kolb's learning style model. The results showed 25 per cent of the participants were accommodators; 22 per cent were convergers; 29 per cent were assimilators and 24 percent were divergers. These results were consistent with the assumption of Kolb (1984) that each learning style is equally presented in the adult population. Five delivery modes were included in this study:

1. Computer-based i.e. instruction delivered through personal computer.

2. TV-based i.e. instruction delivered through television set e.g. videoconferencing and videotapes.
3. Print-based i.e. instruction delivered through reading materials such as books and workbooks.
4. Audio-based i.e. instruction delivered through speakers e.g. audiotapes.
5. Classroom-based i.e. instruction delivered through an instructor in a traditional classroom setting.

Comparing all five-delivery modes in this study, classroom-based mode was chosen as the most preferred method by two-thirds of the participants. However, delivery mode preferences based on the learning styles were consistent with Kolb's model when the overall preference for classroom-based was taken out (Buch & Bartley 2002).

Moreover, a review by Hayes & Allinson (1996) presented several studies that supported the hypothesis that matching the learning style with the learning activity would improve the learning achievement.

2.7 Summary

Augmentative and Alternative Communication has the potential to enhance the lives of many individuals with communication impairments. It is a multimodal system that consists of unaided and aided systems in which they are used together to increase the effectiveness of communication. However, its effectiveness is affected by intrinsic and extrinsic factors. Moreover, training plays an important role on its application.

The training session was developed according to Kolb's model of learning in order to meet most of the participant's learning styles and therefore increase the effectiveness of the training session.

However, literature review of the use of AAC by the dental team is lacking. This study provides an insight about the knowledge and awareness of paediatric dental team towards AAC.

Chapter 3

3 Aims

- To assess the knowledge of the dental team about AAC and AAC strategies.
- To develop a training programme based on current education theory to a dental team.
- To report and evaluate the improvement in the dental team knowledge following the training session.

Chapter 4

4 Methods

A training session was developed for increasing the awareness of the dental team about communication with children with communication difficulties and improving their knowledge about AAC. It included an informative interactive PowerPoint Presentation and a practical “hands-on” session.

Fifteen participants took part in this training session; they represented a particular paediatric dental team in a hospital setting in which the majority of them were postgraduate students.

Prior to the training, a baseline questionnaire was administered to assess the participant’s knowledge and attitudes towards AAC and communication with this group of children. The questionnaires were re-administered immediately following the training session to determine the impact of the training session. Furthermore, the questionnaires were re-administered again after five months to evaluate the sustained knowledge of the participants.

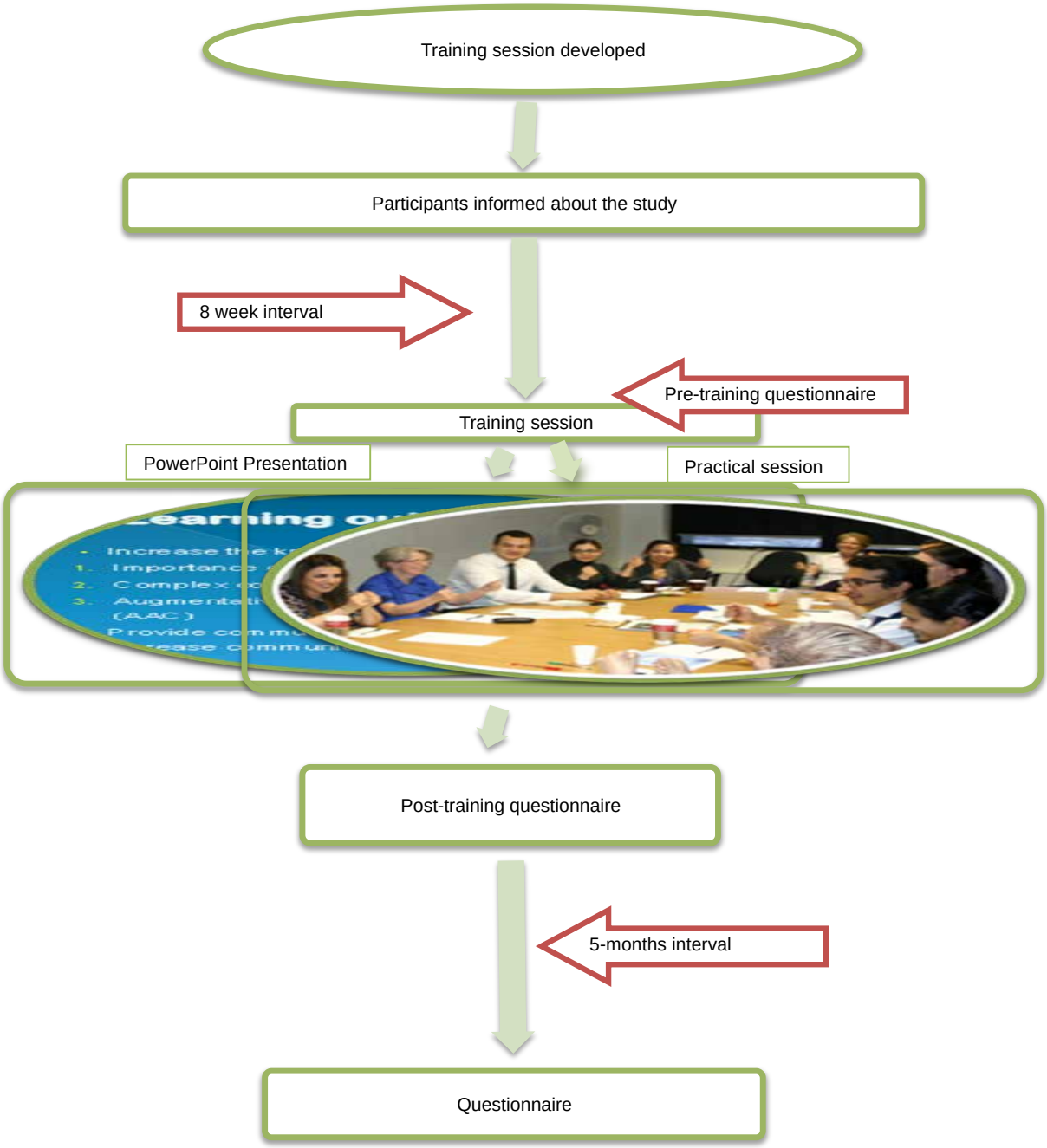


Figure 4.1 Flow diagram of the training session

4.1 Training session

The training session was carried out in the Paediatric Dental Department in Guy's Hospital.

It was presented as a seminar that explains what AAC is, its uses, benefits, and different types of AAC. In addition, it included strategies that can help improve the communication between the dental team and children with complex communication needs. In order to cover all the types of learning modalities; the training session was developed as two parts:

1. An informative PowerPoint presentation.
2. Practical section

The primary investigator, in association with a speech and language therapist, conducted the training session.

4.1.1 Learning outcomes

The training session aimed to:

- Increase the knowledge of the postgraduate paediatric students in relation to the importance of effective communication; complex communication needs and Augmentative and Alternative Communication (AAC)
- Provide simple and practical strategies that help to improve communication effectiveness with children with communication difficulties.

4.1.2 Informative presentation

Before starting the training session, the participants were asked to complete the questionnaire form that was handed to them. They were given 20 minutes to complete it.

The first part of the training session involved an informative Microsoft PowerPoint presentation (Appendix 1) and was presented as follows:

1) Summary of the learning outcomes of the session

2) Explaining the definition of communication and its classification; importance of effective communication and its relation to social and medical model of disability. This part of the session was interactive;

participants were divided into two groups and were asked to answer questions presented on the slide and then discuss it with each other before giving feedback. This section was completed in twenty minutes.

3) Augmentative and Alternative Communication; its definition and classification and, who can benefit and use AAC, its importance and the uses in dentistry were also outlined. In addition, some props and examples of AAC were shown to the participants; Makaton signs and symbols, Big Mack, communication passport and a VOCA device (see 4.1.4Instruments and props).

4) Strategies and application to dentistry. In this part participants were first asked about their personal experience with treating patients with CCD and what strategies they used to aid their communication. Moreover, Tips and strategies that could aid and improve the communication with children complex communication needs attending a dental clinic were described.

Each of the above parts was presented within ten minutes as an interactive presentation between the researcher and the participants.

4.1.3 Practical session

This was the last part of the training session and was administered by the speech therapist. The participants were divided into two groups and were asked to sit opposing each other. A drawing was placed opposing each group one at a time; so that only the group facing the drawing can visualise it while the other group couldn't. The first group was instructed to describe for the second group what was in the drawing without using verbal communication i.e. they were not allowed to speak. The same was repeated for the other group but with a new drawing. Participants were then asked how they felt while trying to pass a message across without speaking. This role-playing was an attempt to describe or demonstrate how people with communication difficulties could feel while trying to communicate.



Figure 4.2 Participants taking part in the training session



Figure 4.3 Participants practicing signs during the practical session



Figure 4.4 Participants during the practical session

Furthermore, the instructor showed the participants some signs for basic words or phrases such as “mother”, “father”, “good”, “sorry”, “what is your name”, “crisps”,” sweet”,” doctor” and “dentist”. Also, the participants were asked if they had any word that could be relevant to dentistry that they would want to know its sign. They suggested some words such as “mouth”, “teeth”, “open”, “close”, “sit on the chair” and “thank you”.

The practical session was conducted in 20 minutes.

At the end of the training session, the participants were asked again to complete the same questionnaire.

4.1.4 Instruments and props

The researcher for the purpose of this study obtained a license (Appendix 2) for the use of the Makaton Vocabulary. The license authorized the use of a specific list of symbols and signs (Appendix 3)

Handouts were distributed for the participants. These included the slides of the PowerPoint Presentation, signs and symbols of Makaton, examples of Widgit Symbols for Communication Passport for Accident and Emergency (Appendix4) and hospital procedures (Appendix 5). In addition, a BigMack device was shown (Appendix 6).

4.2 Participants

The participants were; one Paediatric Specialist Clinical Teacher and eight paediatric postgraduate students at Kings College London; one Consultant in Paediatric Dentistry participated, two SHOs, one SPR, one senior dental nurse and one dental nurse. All participants worked in the Paediatric Dental Department at King's College and Guy's Hospitals. The paediatric dental staff was notified eight weeks beforehand about the exact date and time of the training session to enable them to have sufficient time to make the required arrangements for attending. The postgraduate students participated as part of their scheduled seminars for their master program. There was no need for study leave arrangements in advance and complete attendance of these participants for the entire project was assured. The participants were only informed about the date of the training session; no further information was disclosed about it.

4.3 Questionnaires

Knowledge of the dental team about AAC was assessed by questionnaires (Appendix 7) in three stages:

1. The questionnaire was administered and completed by the participants prior to the training session. These questionnaires were designed to allow an accurate

assessment of the dental's team knowledge and giving them the opportunity to express and present their information.

2. The questionnaire was given out again, at the end of the training session. This ensured that all the participants with 100% response rate completed both questionnaires. The second questionnaire assessed any improvement in their knowledge and awareness on AAC by comparing both the answers of the participants before and after the course.
3. The participants completed a third questionnaire, five months after the training session. It evaluated the sustained level of information presented in the training session, as well as assessing its effect on their attitudes and dental practice.

Participants were asked to complete the questionnaires without referring to any assisting materials. There were no time constraints for completing the questionnaires. However, each of the questionnaires was completed within 20 minutes.

All questionnaires were divided into four sections as follows:

1. Information about participants knowledge and experience
2. Awareness of AAC
3. Implementing AAC into Practice
4. Feedback

4.3.1 Information about participants knowledge and experience

This part of the questionnaire aimed to gather general information about the participants' knowledge and their experience with these children.

4.3.1.1 Visual analogue scale

A visual analogue scale was used to measure how confident they felt towards communication with these children in their dental practice. The participants were asked to mark a 10cm scale that ranged from "not confident" to "confident" prior and after the training session, but due to a printer error the scale was 9.4cm. The markings from the scale were converted to percentage values and a Student t-Test was used to compare these results.

4.3.2 Awareness of AAC

4.3.2.1 Closed questions

This part asked about knowledge of the participants on different examples of AAC and if they had any previous training in any type of AAC.

4.3.2.2 Open questions

The participants were asked open questions on what they thought AAC was and who uses it; if they know or use any types of AAC and why do they think it is important.

4.3.3 Implementing AAC into Practice

This part of the questionnaire intended to assess how the participants communicated with this group of children and what practices they used to aid the communication process. It involved two parts that asked the participants about the following:

1) Whom they direct their communication to i.e. parent, child or both during three different stages of a dental visit:
    a) Diagnosis
    b) Treatment plan
    c) Dental procedures
2) Strategies they use in their dental practice to communicate with children with communication difficulties.

4.3.4 Feedback

Feedback collected was different for each of the questionnaires.

4.3.4.1 Pre-training questionnaire

Participants were asked to write any comment regarding AAC

4.3.4.2 Post-training questionnaires

Feedback for these questionnaires was more comprehensive. Participants were asked about the impact the training session had on their practice and on their attitude towards AAC.

In addition they were also asked to write any suggestions for future training sessions and any further comment.

4.3.4.3 Five-months post-training questionnaire

This questionnaire was the same as the post-training questionnaire, but was given out and filled by the participants five months after the training session.

4.3.4.4 Systematic analysis

A systematic analysis was carried out for the participant's responses. The responses were categorised; the most common ideas or phrases written by the participants were identified and recorded as themes.

4.3.4.5 Visual analogue scale

A visual analogue scale was used in the post-training and the five-months post-training questionnaire to identify usefulness of this training session. Participants marked a scale that was 10 cm in length that ranged from not useful to very useful. But due to a printer error the scale was 9.4cm. Markings from both scales were converted into percentage values and a mean value was obtained for the post-training and the five-months post-training scales independently.

Chapter 5

5 Results

Fifteen participants took part in the training session and completed the questionnaires. The response rate for both pre-training and post-training questionnaire was hundred percent. All of the post-training questionnaires but one was obtained directly after the end of the training session. However, the response rate for the five-months post-training questionnaire was 93.3 %; one questionnaire was not answered, the participant was on maternity leave.

5.1.1 Information about participants knowledge and experience

The majority of participants reported to have worked with children with communication difficulties but this was less reported in the five-months post-training questionnaire (see Figure 5.1). However, most of the participants to have limited experience with this group of children; majority reported to have worked with them for less than 5 years (Figure 5.2) and see only between 0-5 of these children in their practice (Figure 5.3). On the other hand, more participants reported to see 5-10 of these children in their practice per year in the follow-up questionnaire compared to the first two questionnaires.

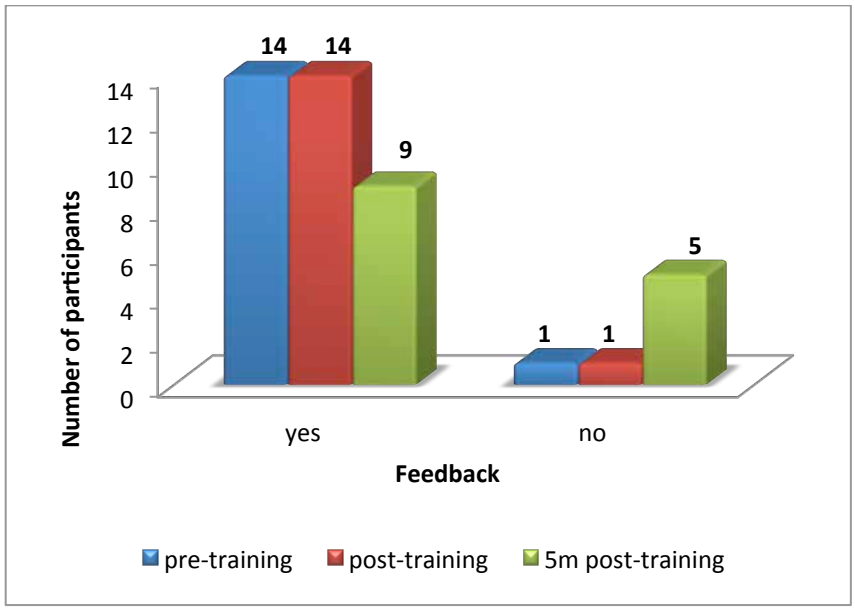


Figure 5.1 Have you worked before with children with communication difficulties?

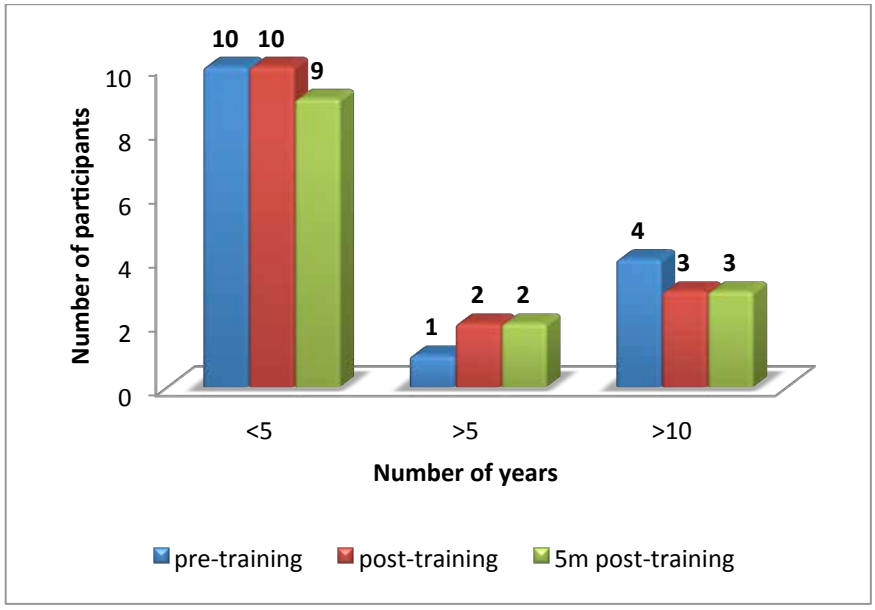


Figure 5.2 How many years have you been working with children with communication difficulties?

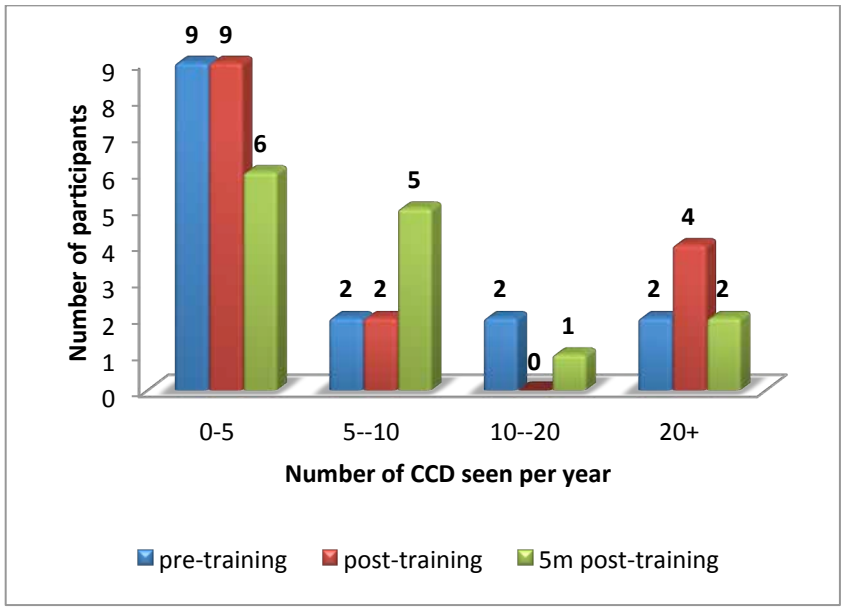


Figure 5.3 How many children with communication difficulties do you see in your practice per year?

The responses of the participants about their experience with interacting with these children other than in their dental practice varied between the pre-training and the post-training session; majority reported to have experience with these children other than in a dental environment in the pre-training questionnaire while less than half reported that in the post-training questionnaire. However, their responses were evenly distributed in the follow-up questionnaire (Figure 5.4).

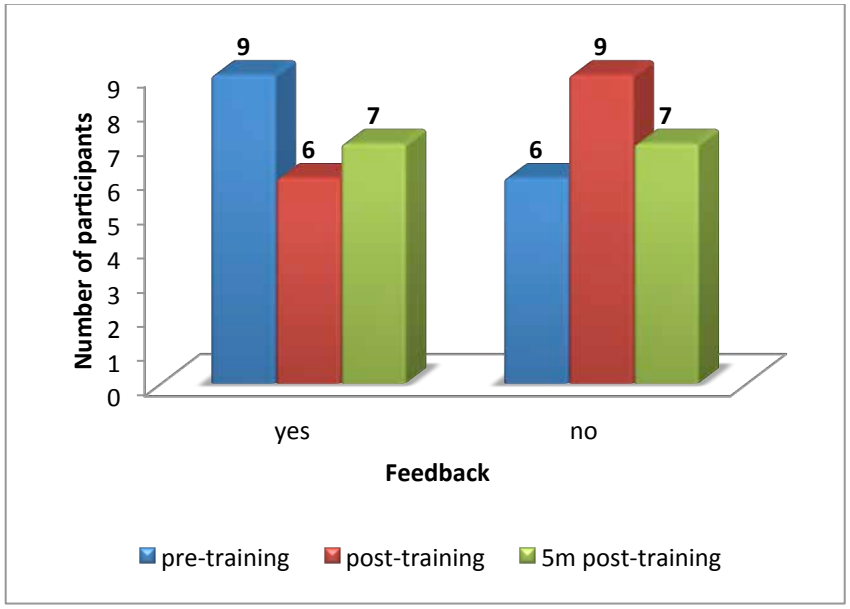


Figure 5.4 Did you have experience interacting with children with communication difficulties other than your dental practice?

None of the participants reported to have any clinical training for training patients with communication difficulties before or directly after this training session. However, the majority of them reported to have training in the five-months post-training questionnaire (Figure 5.5).

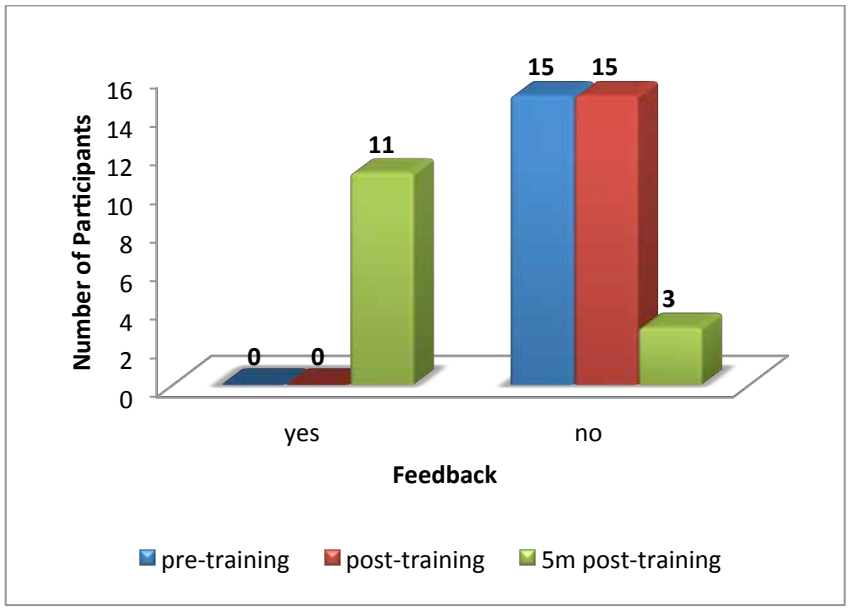


Figure 5.5 Did you have any clinical training for treating patients with special needs or communication difficulties?

Moreover, they all reported to have an interest in attending future courses that help them with communication with this group of children (Figure 5.6).

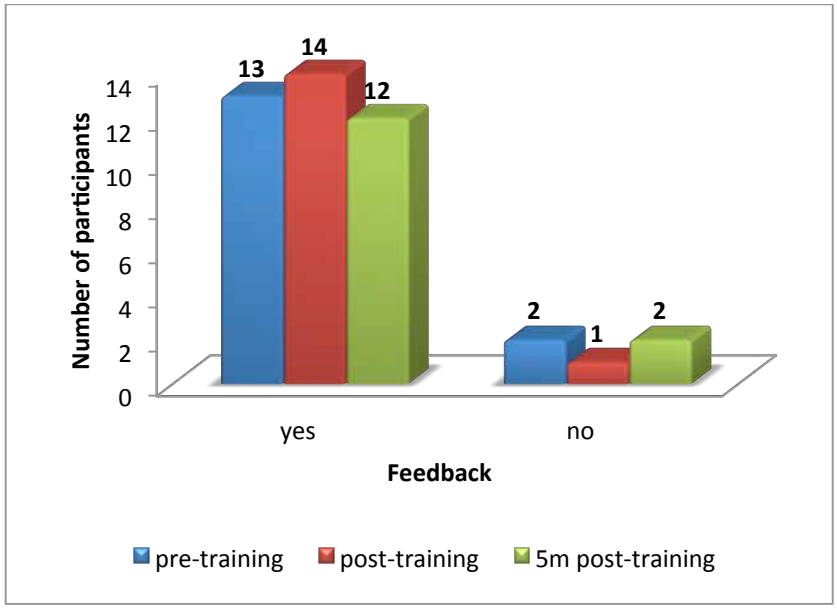


Figure 5.6 Would you attend a course aimed at helping you to communicate with special needs children?

Participants were asked how they feel about communicating with children with communication needs in their practice in both questionnaires. This question was divided into two parts; one that assessed how confident the participants felt and the second part asked about the difficulty they perceived towards communication with this group of children.

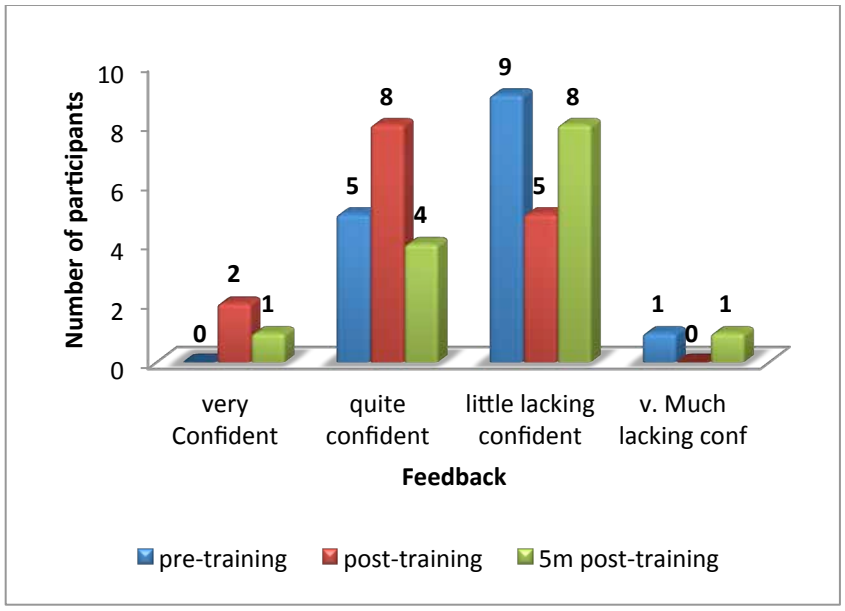


Figure 5.7 How do you feel about communication with children with communication difficulties in your practice?

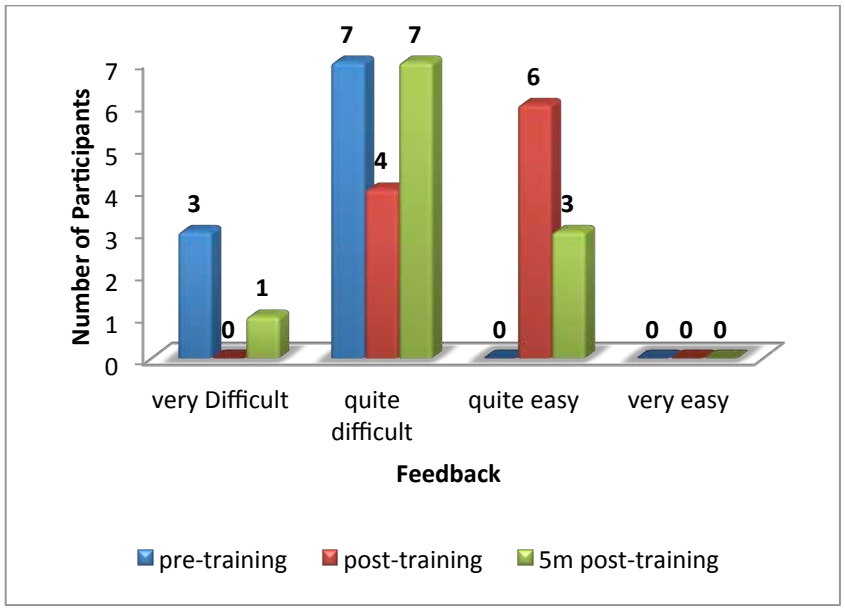


Figure 5.8 How do you feel about communication with children with communication difficulties in your practice?

Overall, in all the three questionnaires none of the participants reported to find communication with these children as “very easy”. Initially, most of the participants felt “little lacking confident” about communicating with them and found communication “quite difficult”. Following the training session, more participants reported to feel “quite confident” and found it “quite easy”. However, in the five-months post-training questionnaire, results were similar to the initial ones (further details in

Figure 5.7 and 5.8).

5.1.1.1 Visual analogue scale

Markings from pre-training, post-training and five months post-training visual analogue scales were converted to percentage of how confident they felt on communication with children with communication needs (Figure 5.9).The mean was calculated for the sum of 14 participants out of 15. One marking was spoiled; it was wrongly applied in the first two questionnaires and therefore not included in the final results. The mean was also calculated for the last questionnaire (n=13); one participant did not mark the scale. The values of the analogue scales were compared for all three questionnaires to determine any improvement in confidence following the training session. When comparing the pre-training with the post-training, there was a significant improvement in how the participants felt about communication after the training session (t-Test: $p= 0.01$). However, there was no significant improvement when the five months post-questionnaire values were compared with the pre-training and the post-training i.e. between five months post-questionnaire with pre-training and 5 months post-training questionnaire and post-training questionnaire (t-Test: $p>0.5$).

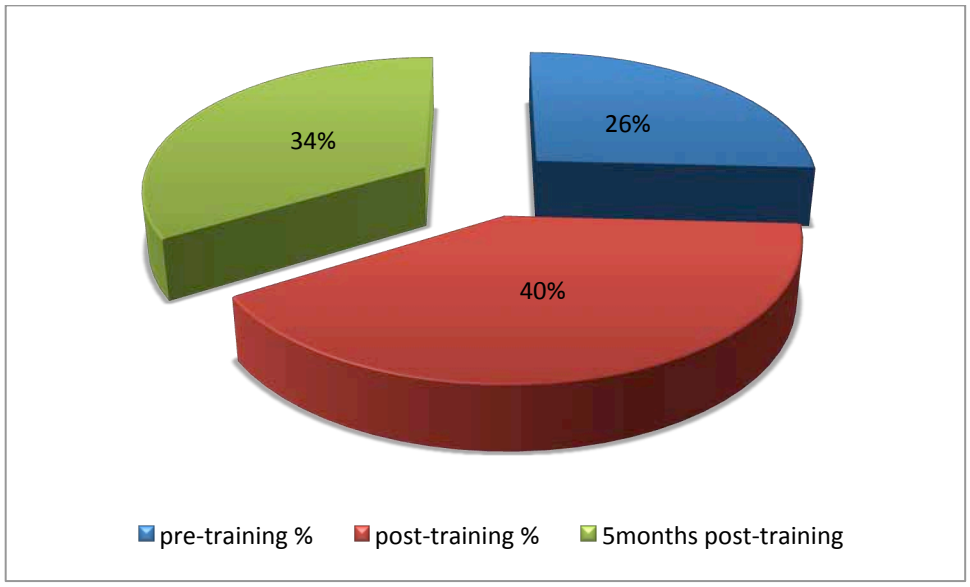


Figure 5.9 Mean of Visual Analogue Scale measurement of participant's confidence

5.2 Awarness of AAC

The results for these questions compared what the participants knew before the training session with after the training and whether their knowledge was obtained by a previous training course.

5.2.1 Responses to closed questions

The results of this part of the questionnaires were compared to evaluate what the participants knew about AAC before and after the training.

MAKATON and BSL were the only two categories that the participants knew about before the training session. Following the training session, both questionnaires showed an increase in the participant's knowledge and awareness about different examples of AAC (Figure 5.10).

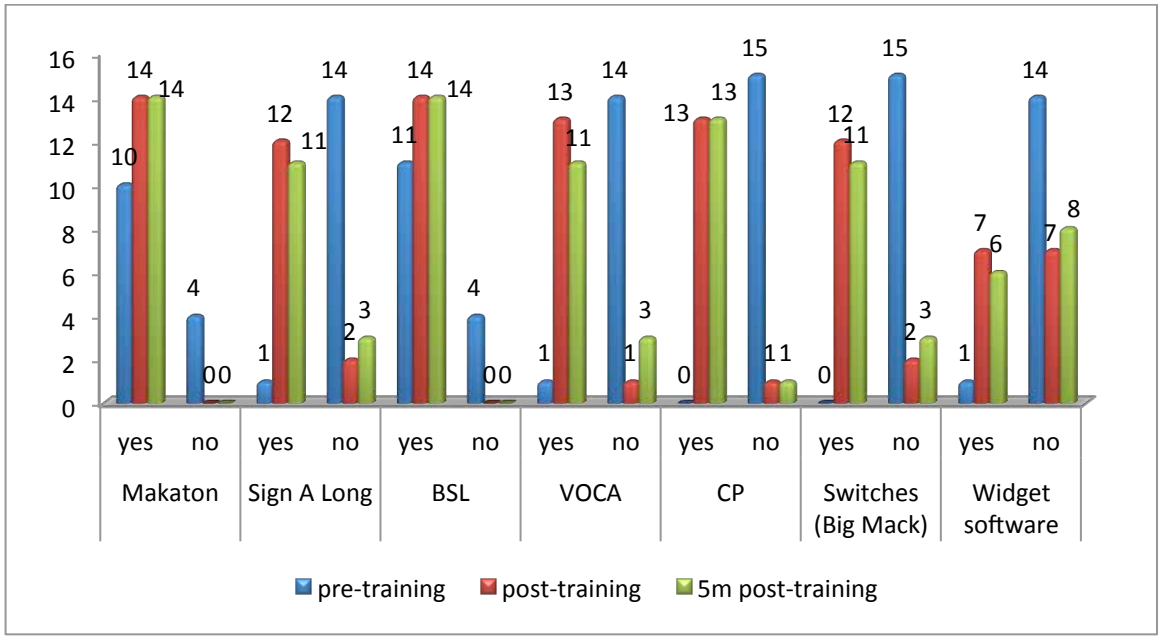


Figure 5.10 Have you heard of the following examples of AAC?

None of the participants reported having previously attended a training session related to AAC (Figure 5.11).

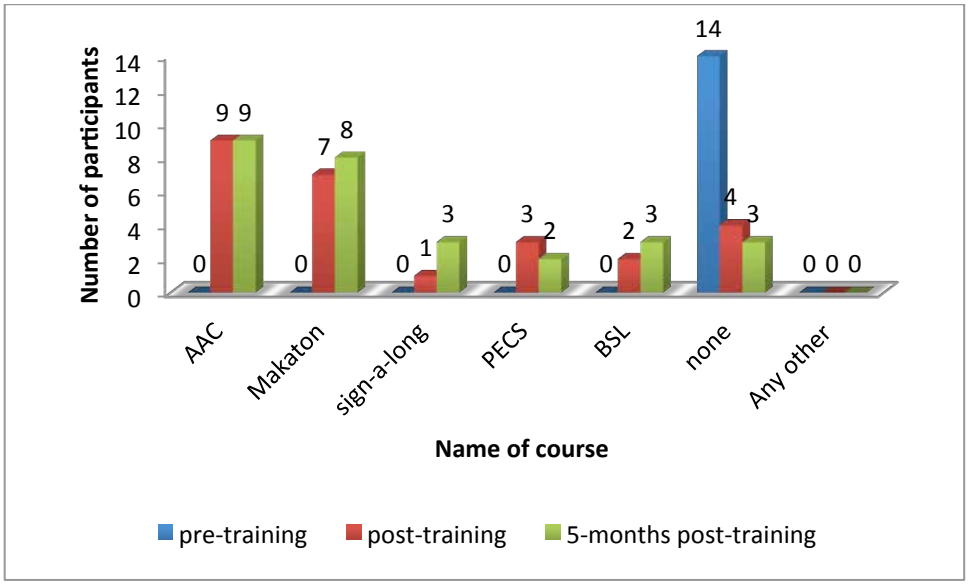


Figure 5.11 Have you attended any training course from the following?

5.2.2 Responses to open questions

Participants were asked in this section about their knowledge in AAC: what they thought it is, who can use it, what types or examples of AAC they know and use in their practice, and why do they think it is important.

Overall, participants responses after the training session were more developed and in depth; participants had a better idea about AAC and listed more examples of it (Appendix 8).

5.3 Implementing AAC into practice

This part of the questionnaire assessed how the participants communicated with children with communication with difficulties and what practices they used to aid the communication process.

There was slight difference in the reported results between the three questionnaires. However, the majority of the participants' discussed the diagnosis, treatment planning and the dental procedures with both the child and the parent. This was shown in all questionnaires. None of the participants discussed these three events with the child only (Figure 5.12 for further details).

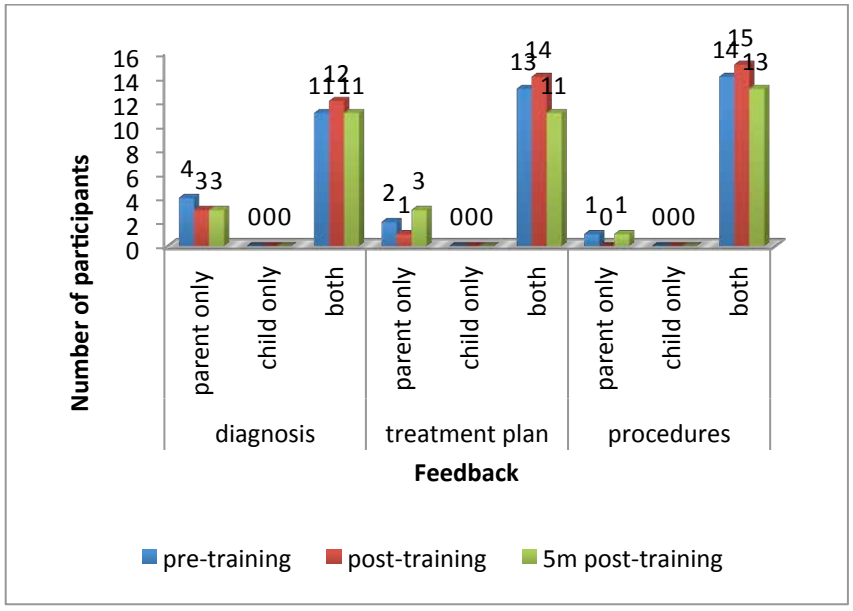


Figure 5.12 Do you usually speak with the parent, child, or both during the following?

The participants were asked about the different startegies they used in their practice with children with communication difficulties :

1. Asking the parents about the communication mode that the child uses:

Before the training session, the participants equally reported to “occasionally” or “often” ask parents about how their child communicates in general; what are strategies or aids used by the child for communication. More particiapnts reported to “often” ask parents about it in both questionnaires after the training session. One participant added “always” as an answer in the second questionnaire which was not included as part of the answer scheme (See Figure 5.13).

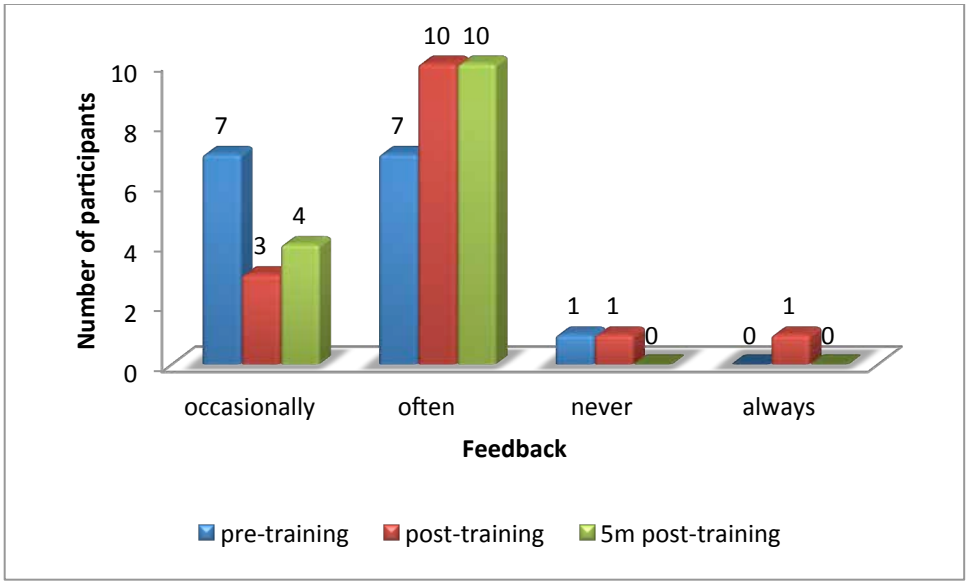


Figure 5.13 Ask parents about communication mode.

2. Asking the child about the communication mode used :

Before the training session,participants equally reported that they would “often” or “never” ask the child about the communication mode. However, following the training session the majority reported to “often” ask the child about it (Figure 5.14).

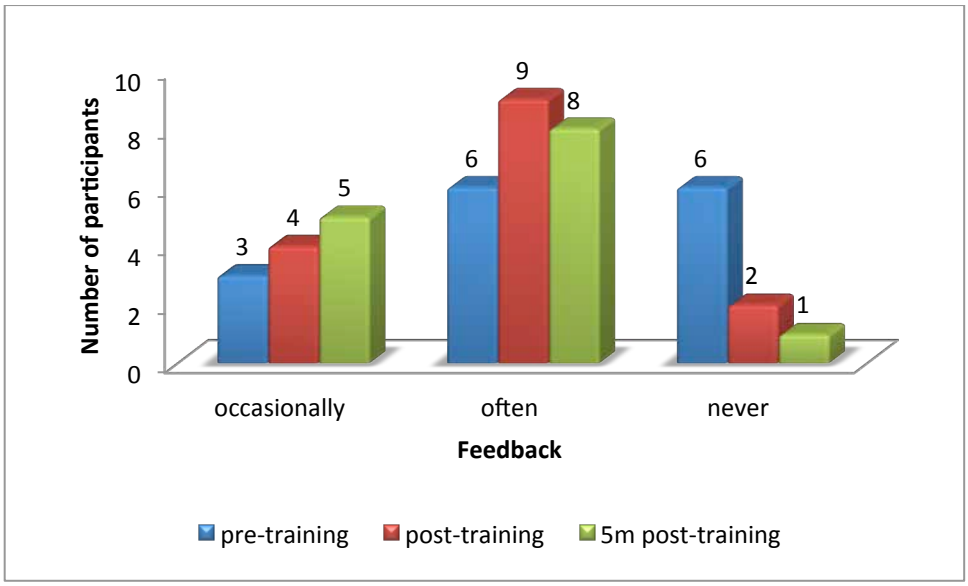


Figure 5.14 Ask the child about the communication mode.

3. Ask about the communication passport of the child

None of the participants reported that they asked about the communication passport in the pre-training questionnaire. But following the training session, responses varied. Yet most of the participants still responded that they “never” asked about the communication passport (Figure 5.15 for further details).

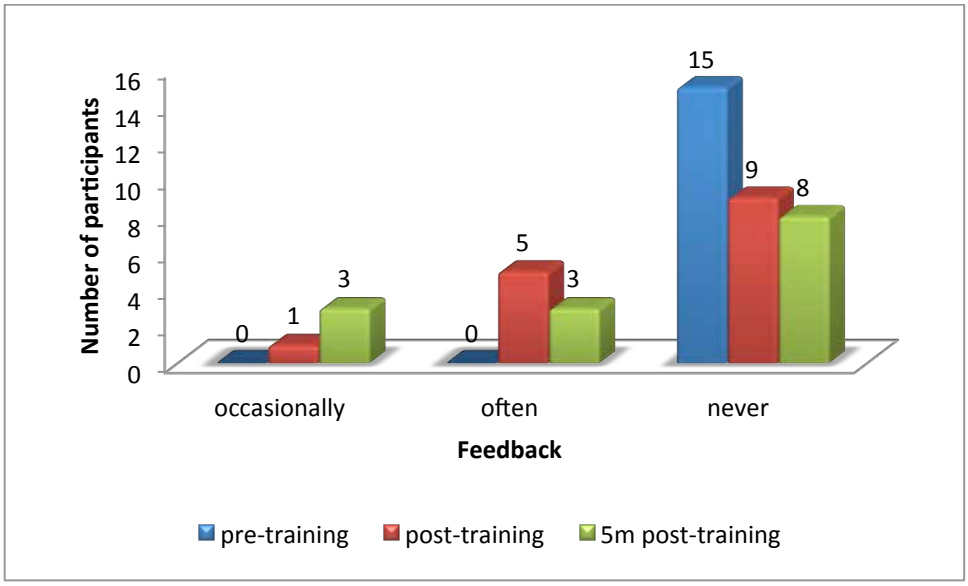


Figure 5.15 Ask about the Communication Passport.

4. Observe the child's non-verbal communication

Before the training session, participants equally reported "occasionally" or "often" observing the child's non-verbal communication. The reported results in the post-training questionnaire were similar to the pre-training one, but one participant added "always" as an answer in the second questionnaire which was not part of the answer scheme. However, more participants reported to "often" observe it in the five months post-training questionnaire (See Figure 5.16).

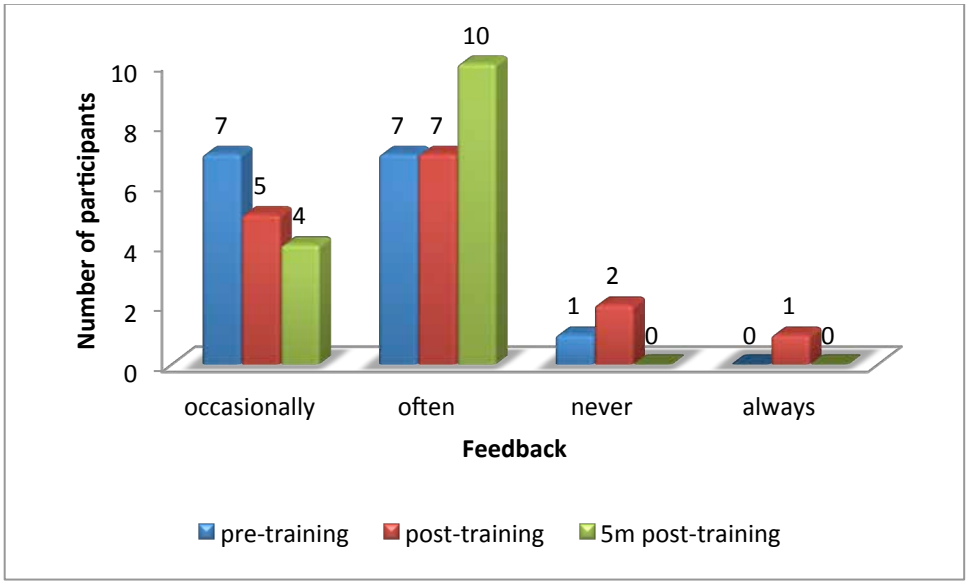


Figure 5.16 Observe the child's non-verbal communication.

5. Using single word and/or short sentences

The majority of the participants reported in the pre-training questionnaire that they used single or short sentences “occasionally” or “often”. Following the training session, more participants reported usage (See Figure 5.17 for further details).

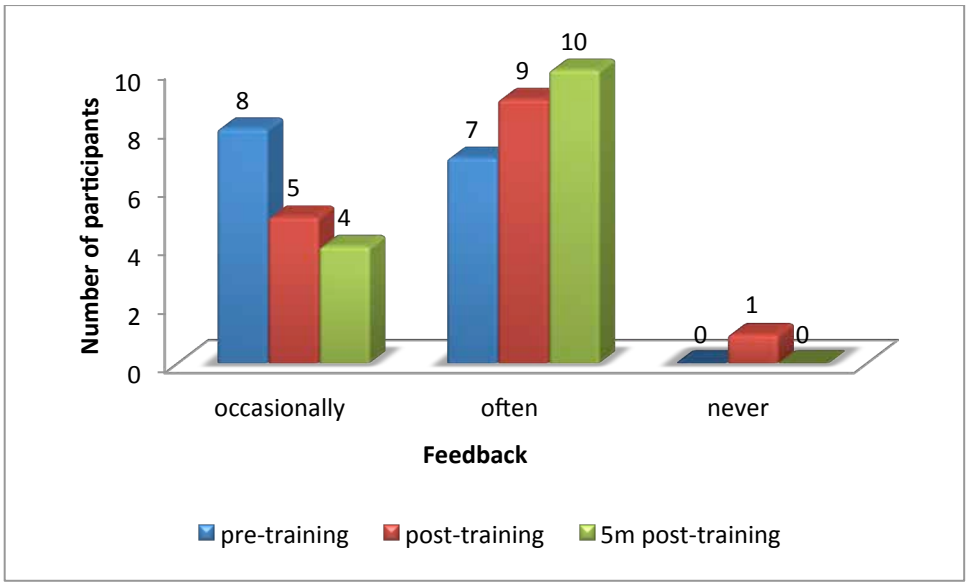


Figure 5.17 Use single and/or short sentences.

6. The use of non-verbal communication

The majority of the participants reported to use non-verbal communication “often” while communicating with these children, this increased following the training. (For further details see Figure 5.18).

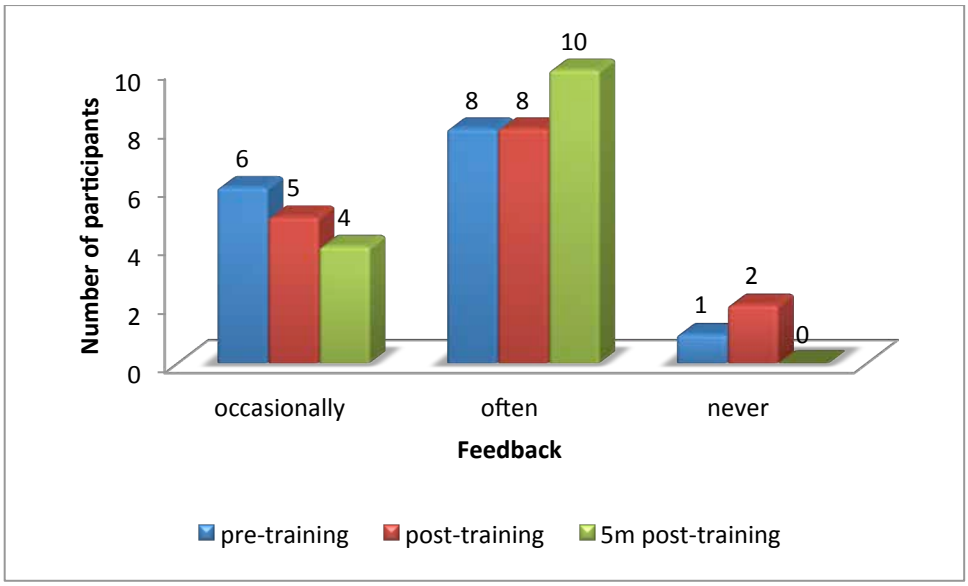


Figure 5.18 Using non-verbal communication.

7. Using signs and symbols

Initially, most of the participants reported to often use signs and symbols. However, the number of participants reporting that decreased in both post-training questionnaire (See Figure 5.19).

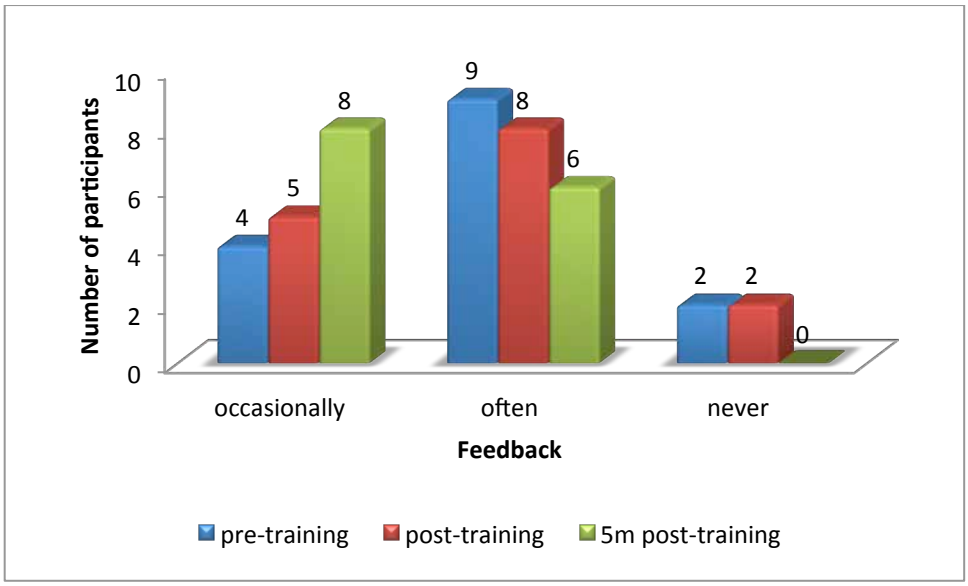


Figure 5.19 Use of sings and symbols.

8. Using gestures

Participants equally reported the use of gestures “occasionally” or “often”. Participants reported more frequent usage following the training session; the highest being reported five months after the training session (See Figure 5.20).

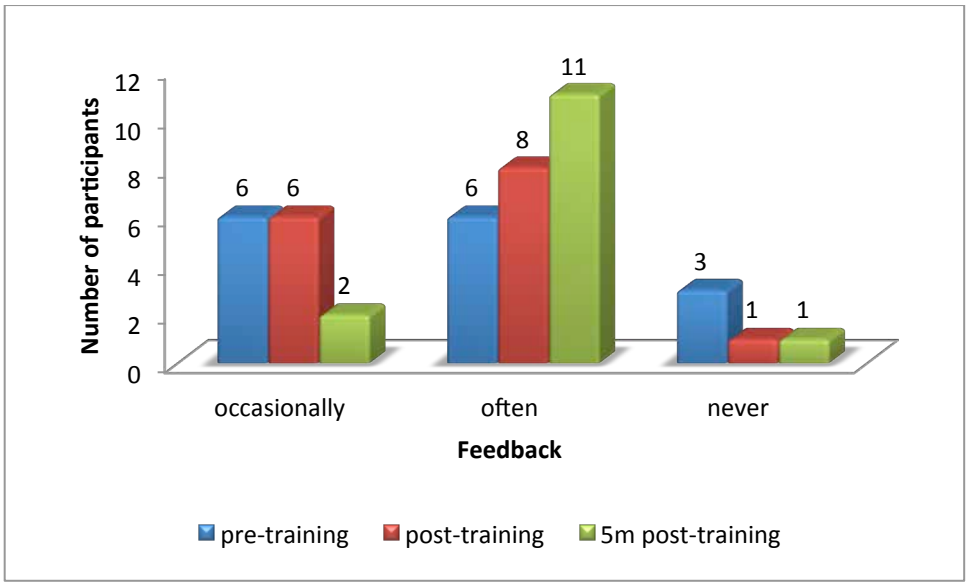


Figure 5.20 Gestures.

9. Using drawings and graphics

Most reported the usage of drawings and graphics before the training session but this decreased afterwards. Responses were almost evenly distributed between drawings and graphics (see Figure 5.21).

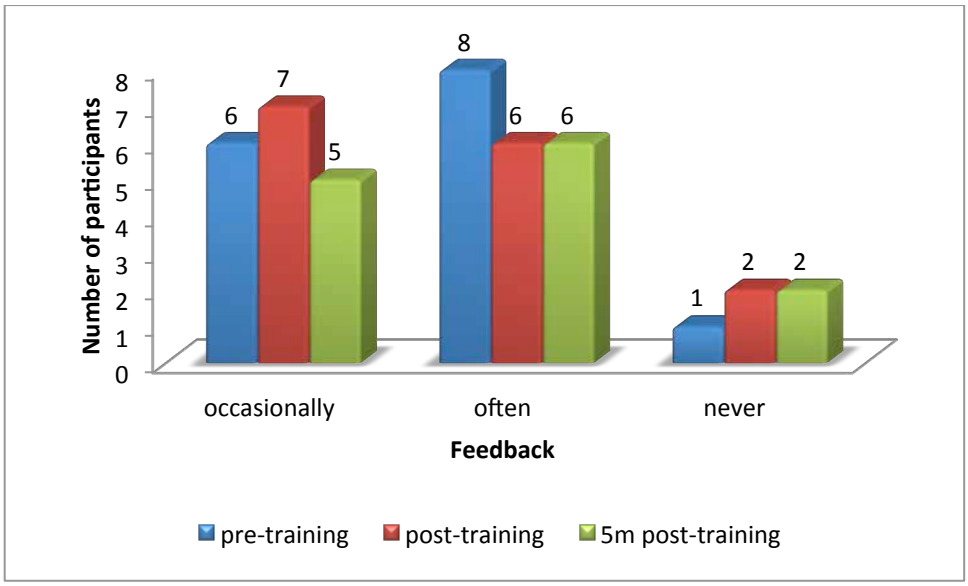


Figure 5.21 Drawings and graphics.

10. Using MAKATON

Before the training session, the majority of the participants reported “never” using MAKATON. Following the training session, the responses of the participants were distributed varied but most responded with “never” (see Figure 5.22).

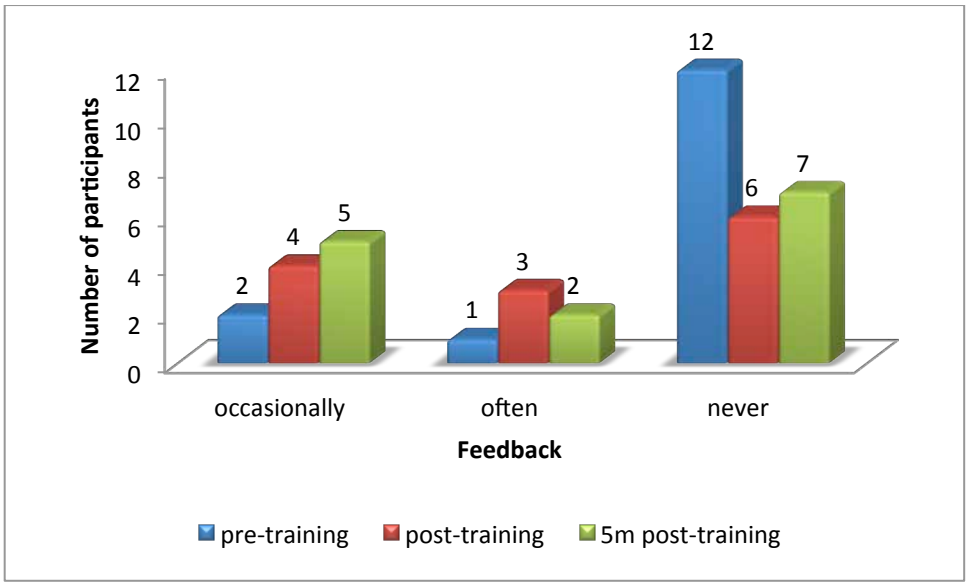


Figure 5.22 MAKATON.

11. Liaising with a speech therapist

In the pre-training questionnaire, most of the participants reported never liaising with a speech therapist. However, more participants reported in the later questionnaires to liaise with a speech therapist (see Figure 5.23).

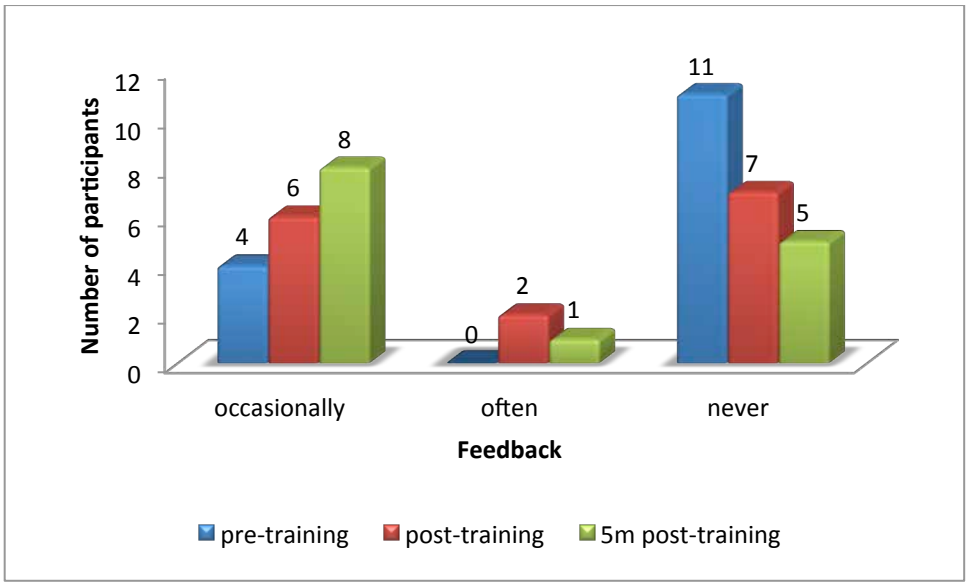


Figure 5.23 Liaising with speech therapist.

5.4 Feedback

5.4.1 Impact of the training session on dental practice

Feedback obtained from questionnaires following the training session was systematically analysed (Appendix 9). The themes reported are shown in the Table 5.1 below.

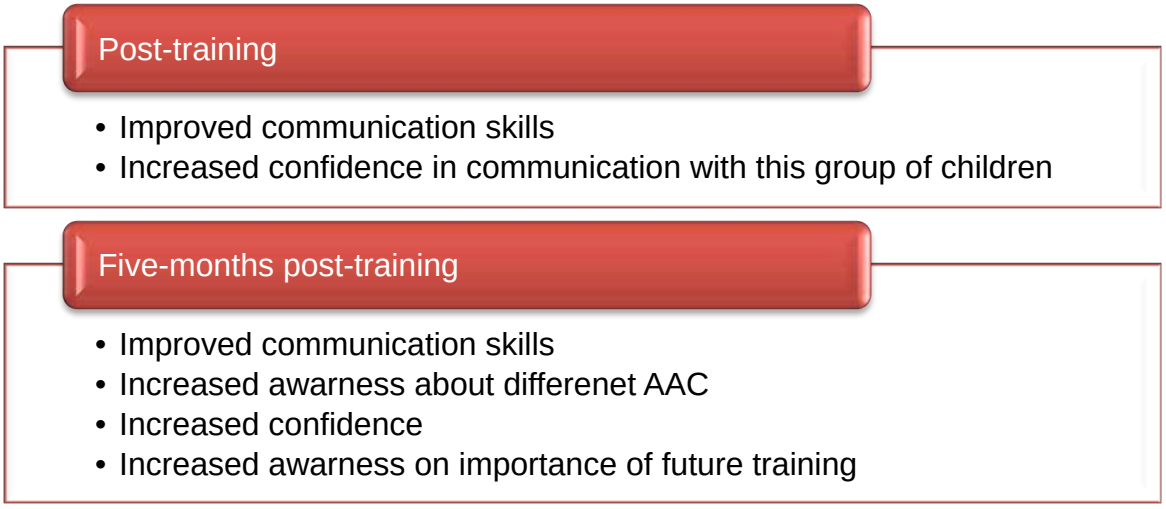


Table 5.1 Themes from feedback of participants on impact of training session on their dental practice.

5.4.2 Impact of training session on attitude towards AAC

A systematic analysis was carried out for the feedback from both questionnaires (Appendix 10). Both questionnaires had similar repetitive themes (Table 5.2).

Themes from post-training and five-months post-training feedback
• Improve communication skills • Increase in confidence • Increase in awarness and knowledge about AAC • Enthusiasim for learning more about AAC

Table 5.2 Themes of feedback for impact of training session on attitude towards AAC.

5.4.3 Visual analogue scale

An average was calculated from the responses of the participants to the visual analogues scale, which measured the usefulness of the training session. This was then converted to a percentage, presented in the Figure 5.24 below. Participants thought the session was very useful; the feedback from the post-training and five-months post-training showed 84.97% and 79.03% respectively.

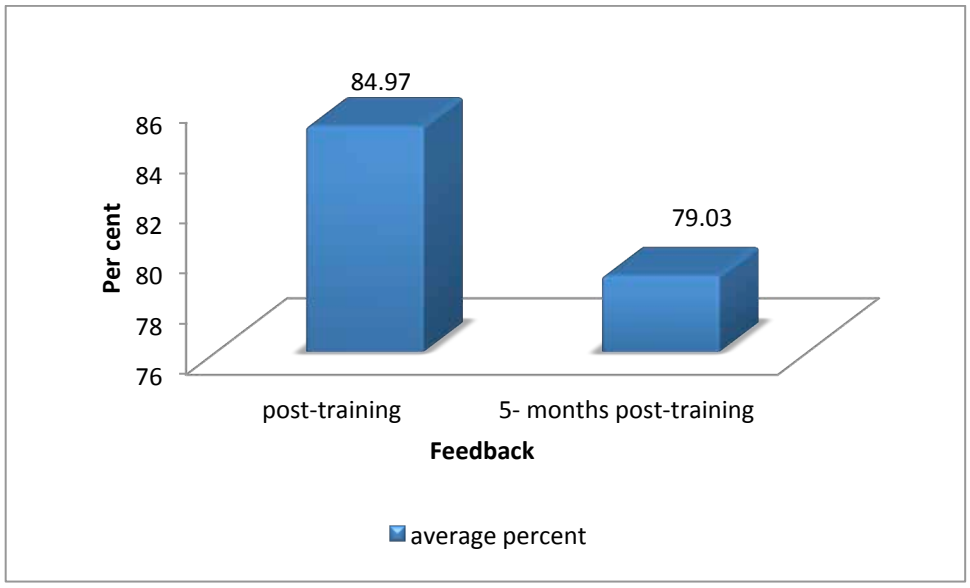


Figure 5.24 Responses of participants for Visual Analogue Scale.

5.4.4 Further suggestions and comments

All participants showed enthusiasm towards having future training courses and they suggested that these should be carried out frequently and performed by qualified trainers.

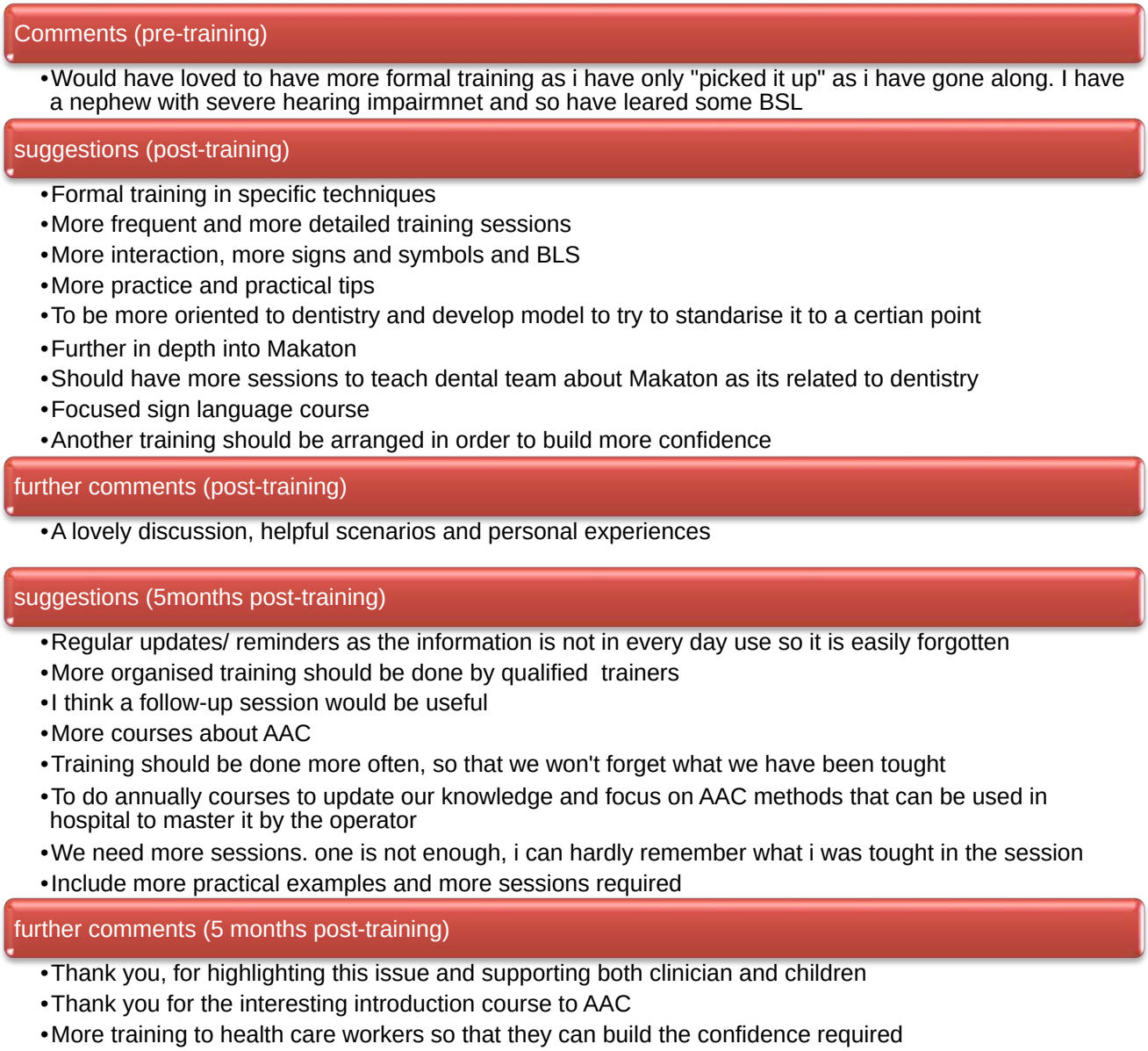


Figure 5.25 Further comments and suggestions by participants

Chapter 6

6 Discussion

The paediatric dental team felt that they learnt about communication with children who have complex communication needs. This study shows that communication skills and confidence were improved following a training session. However, this wasn't sustained over time. This may due to the fact that postgraduate students made up a large proportion of the sample; maybe their development of knowledge meant that they were more aware of the challenges from communication with this group of children so their responses were less positive in comparison to the rest of the participants.

On the other hand, it is possible that participants simply forgot over time. If so, this suggests that more frequent training may be required in the future.

Improved communication skills and AAC knowledge suggest that the combination of an informative and a hands-on training session, which were carried out according to Kolb's learning theory, suited the study group and it resembles the delivery of dental and medical education.



Figure 6.1 Learning theory used in the training session

6.1 Information about participants knowledge and experience

Participants involved in this study represented a particular specialist hospital dental team. Therefore the sample selection for this study was appropriate but was not representative.

There is no previous literature about AAC training for dental team in general or paediatric dental team in particular. However, Patel and Khamis (2005) presented a training program for AAC that was given to twenty special education teachers in a Palestinian Arab society in Israel. The sample in our study was fifteen, which is comparable to the above-mentioned. On the other hand, the situation of the special

needs teachers in Palestine and the postgraduate students, that made a large proportion of this sample study, are different and therefore not comparable.

The participants were only informed about the date of the training session; no further information was disclosed about it. Moreover, Participants had no previous training in any type of AAC and no knowledge from elsewhere before or in the five months timeframe. Thereby, the chance of the participants in acquiring information about AAC before completing the questionnaires was eliminated and thus chance for sample contamination compromising the results of the research was reduced.

The majority of the participants reported working before with this group of children. They are all involved in treating children in Guy's hospital where it is common for children with communication difficulties as part of their medical condition to attend for dental treatment.

On the other hand, the majority of the participants reported to have limited experience with these children. This is because a large proportion of the study sample was postgraduate students with less positive responses.

All participants considered this training session as the only course they had. None of the participants had previous clinical training related to communication with these children.

Almost all of the participants were motivated to attend future courses that aim at helping them to communicate better with these children.

There was an initial overall improvement in the participant's confidence towards communication with these children. More participants perceived it as less difficult following the training session.

The results of this study correspond with previous ones that suggested the importance of training sessions to increase skills and knowledge (Al-Zoubi and Abdel Rahman 2011).

In addition, studies have reported the importance of training to increase knowledge about AAC and increase confidence when communicating with patients with communication needs (Finke *et al*. 2008; Patel & Khamis-Dakwar 2005).

Nevertheless, this improvement was not sustained during the five months interval period. Therefore, this study highlights the importance of frequent training.

6.2 Awarness of AAC

There was a significant improvement in the awareness of the participants about the variable examples of AAC following the training session.

This improvement varied between the different examples of AAC, this may be due to different individual learning abilities; participants interpreted and comprehended information differently from the training session.

Participants' responses were more developed after the training session; they presented an increase in their knowledge and awareness towards AAC. Moreover, participants were more aware of the role of AAC for effective communication with these patients that will provide better treatment outcomes. This was clearly stated by several participants when they were asked about the importance of AAC:

"Removes barriers to communicate. Therefore, helps reduce the impact of disability. Understanding health needs and increases likelihood of successful outcomes".

"If a child patient understands what you want to do they are far more likely to cooperate. If a child/ patient cannot communicate their own feelings, we are missing out an important aspect of their life, well-being and clinical problems".

The use of participants for strategies that do not require training courses or additional equipment increased in the re-evaluation questionnaires.

This improvement was shown for all unaided AAC strategies; asking the child and the parent about the communication mode, asking about the communication passport of the child, observing the child's non-verbal communication, using single/short sentences during communication, using non-verbal communication and the use of gestures.

The instant improvement in the post-training questionnaire reflects the participants' enthusiasm and their intention to use these strategies more often, while the continued

improvement in the last questionnaire reports the actual use of these strategies by the participants.

Whereas, strategies that may require training courses such as signing or additional equipment such as the use of symbols, drawings and graphics, participants reported their usage less frequently, this was more significant in the five months post-training questionnaire results. Training courses are required to become familiar with signing which may not be feasible due to time constraints (Murphy 2006). Moreover, symbols, drawings and graphics may not be accessible or provided in the dental environment if not brought with the patient.

On the other hand, there was an improvement in the results for using Makaton. Although this study wasn't a MAKATON training session nor did any of the participants have a formal Makaton training during this study period. However, participants were motivated and enthusiastic to learn and use it. One of the participants added a note to their answer "*I never used it before but I will definitely be doing in the future"*

An improvement was also noted in the results of the participants for liaising with a speech therapist, this shows an increase in awareness in the importance and role of speech therapist with communicating with these children.

6.3 Feedback

Feedback from the participants showed increased awareness of participants about AAC and improvement in communication skills that will improve the treatment effectiveness. In addition, responses highlighted the importance of frequent qualified training sessions, which was suggested by the participants.

Furthermore, participants reported an increase in their confidence in communication with theses children.

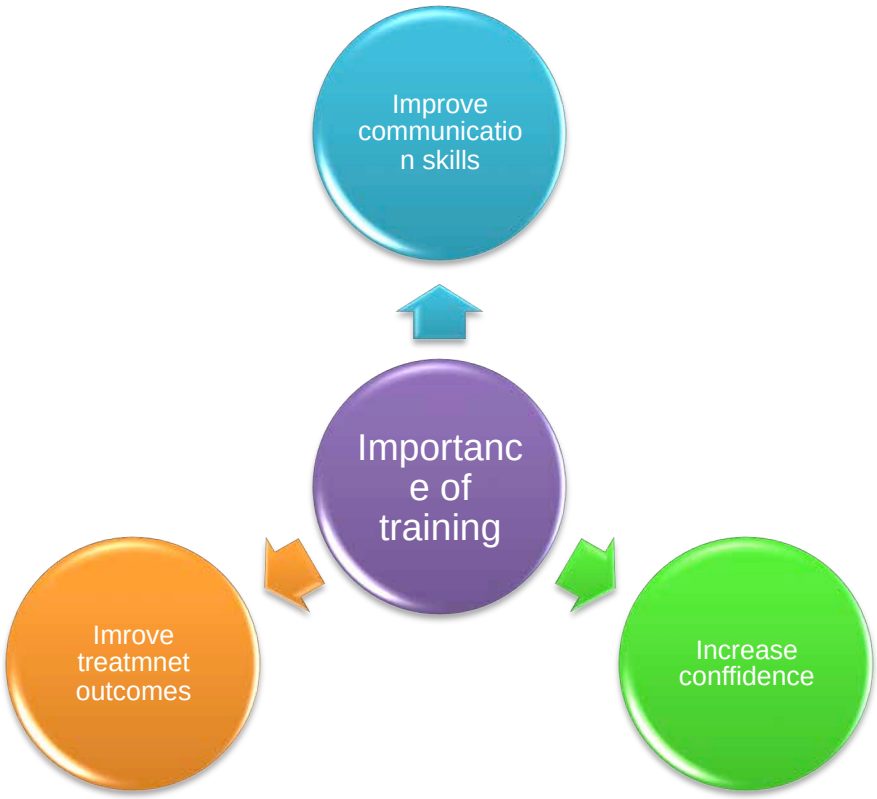


Figure 6.2 Effect of AAC training courses

This was the first study to assess the dental team awareness of AAC and deliver a training session to improve their knowledge about it. There are no other similar studies that assessed the knowledge and awareness of dental team towards AAC.

The study sample included a complete dental team; Paediatric Specialist Clinical Teacher paediatric postgraduate students Consultant in Paediatric Dentistry participated, SHOs, SPR and dental nurses. Therefore, it represented a particular department of Paediatric Dentistry in a hospital setting in which most of the participants were postgraduate students.

The study sample was not contaminated; participants did not have any course before or during the five months of the study.

The training session was delivered to match the learning theory and the learning styles of the participants. It consisted of mixed educational modes; hands-on, interactive seminar and a practical session.

A qualified speech therapist carried out the practical session. The session involved role-playing and demonstration of basic signing.

In addition, the main investigator of this study obtained a licence from the MAKATON charity for presenting some of the signs and symbols as part of the AAC props used in the training session.

Questionnaires used in this study included both quantitative and qualitative data, with little amount of missing data.

This study was accepted and short-listed for the research prize in BSPD 2012 meeting (Appendix 11). It can be modified in the future to obtain more valuable results as well as being carried out different countries.

6.4 Limitations

The study sample was representative for dental hospital setting; it is not representative of Paediatric Specialists, primary care setting or dental team in a community setting. It would be beneficial to carry this study for a specialist group or in a primary care setting in order to be representative.

This study was restricted to the dental team only. A three-way study involving the dental team, parent and the children would make this study more valuable.

The missing data was probably due to non-optimal layout of the questionnaires; a structured interview questionnaire may have less misinterpreted questions, less spoiled results and all questions answered.

6.5 Implications of this study

During the development of the training session for this study, a communication book "The Hospital Communication Book" was identified in the department (Appendix 12).

However, the paediatric dental staff was not aware of this communication book until the start of this study.

This study highlighted not only the importance of integrating AAC systems such as communication books into dental environment and making them accessible to them but also providing the dental team with the required training to improve their communication skills with this group of children, which will further improve the effectiveness of delivering treatment for them.

Moreover, the above-mentioned communication book can be modified to be more child-oriented and age-appropriate for children attending in a specific dental setting.

6.6 Further research

No similar studies involving dentists have been conducted in the United Kingdom or other countries. Future research can include three study groups; a control group, a group similar to this study and a third group with an initial training session and another follow-up training session. Qualified trainers can carry out these training sessions.

Involving children/parents getting their opinions and feedback could further modify this study for future research. Furthermore, different dental team groups can participate in future studies; a larger representative sample with varying experience levels, involving primary care setting and hospital setting.

6.7 Conclusion

The study demonstrated that training session increased the awareness and the knowledge of the participants as well as increasing their confidence regarding communication with special needs children that they may encounter in their dental practice. However, AAC may be forgotten if not practiced regularly. This was proven by the data reported in my study, which showed a decrease in confidence levels five months following the training session. Therefore, this highlights the importance of regular training courses and suggests that they should be made more relevant to dentistry and conducted by qualified trainers.

7 Appendices

Appendix 2

Makaton licence obtained for this study

Standard licence for the use of the Makaton Vocabulary

Licence granted by:	The Makaton Charity, of Manor House, 46 London Road, Blackwater, Surrey GU17 0AA ("TMC")		
Licensee:	Rana AbuRashed, of 78 Longstone Court, 22 Great Dover Street, London SE1 4LB and Prof. Marie-Therese Hosey Rana_a_r@hotmail.com		
Parts of the Makaton Vocabulary to be reproduced ("the Works")	Makaton Symbols and Line Drawings of Signs from the Core Vocabulary and Resource Vocabulary as set out in Appendix A		
The material on which the Works are to be reproduced ("the Material"):	Postgraduate Thesis on Paediatric Dentistry at Kings College, London		
The territory covered ("the Territory")	The UK		
Permission to use the MAKATON trade mark:	Yes:	☐	Subject to approval of the "material"
	No:	✓	(tick box)
Licence fee(s)	£0.00 n/a		

Signed for and on behalf of The Makaton Charity: [signature]

Date : 06.02.2012

Signed for and on behalf of the Licensee : [signature]

Date : 29/3/12

This licence is governed by the terms set out overleaf which may not be altered in any particular without the written consent of The Makaton Charity.

List of Makaton symbols and line drawings of signs from the Core Vocabulary and Resource Vocabulary used in this study:

Line Drawings of signs

There
To eat 1
To look
To stand up
To stand
To sit
To wash
To go
To come
To give 1
Good
Bad/ Naughty
Yes
No
Please
Thank you
Good morning
Good bye

Mummy
Daddy
Brother
Sister
Nurse
Doctor
Drink
Biscuit
Dinner 1
Toilet
Bed/ To sleep
Chair
Table
House
Car/ Bus
I/ Me
You
Where
What
Here

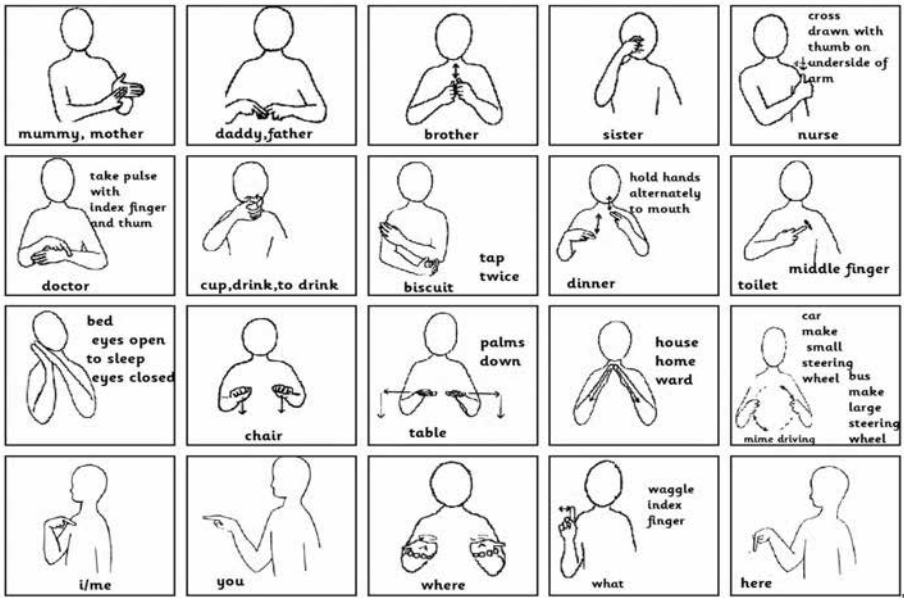
Symbols

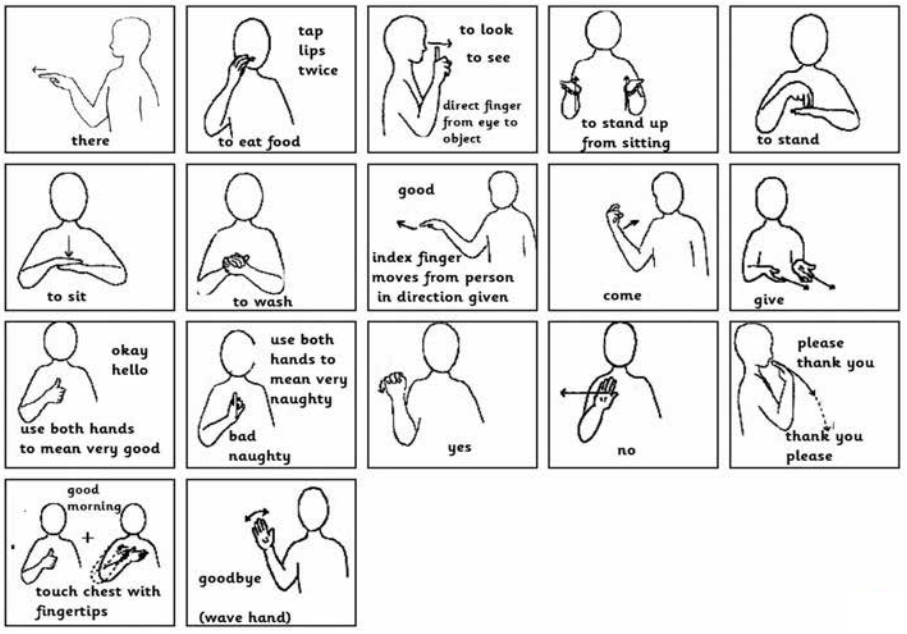
To wash 1
To wash 2
To bath
To shower
To go
To come 1
To come 2
To give 1
To give 2
More
Good 1
Good 2
Okay
Bad/ Naughty
Yes
No
Please
Thank you
Hello
Goodbye

Mummy
Daddy
Brother 1
Brother 2
Sister 1
Sister 2
Drink
Water
Biscuit
Dinner 1
Dinner 2
Bread
Food
Toilet
Bed
Chair
Table
Washbasin
Bath
Shower 1

Appendix 3

1. Makaton line drawings of signs

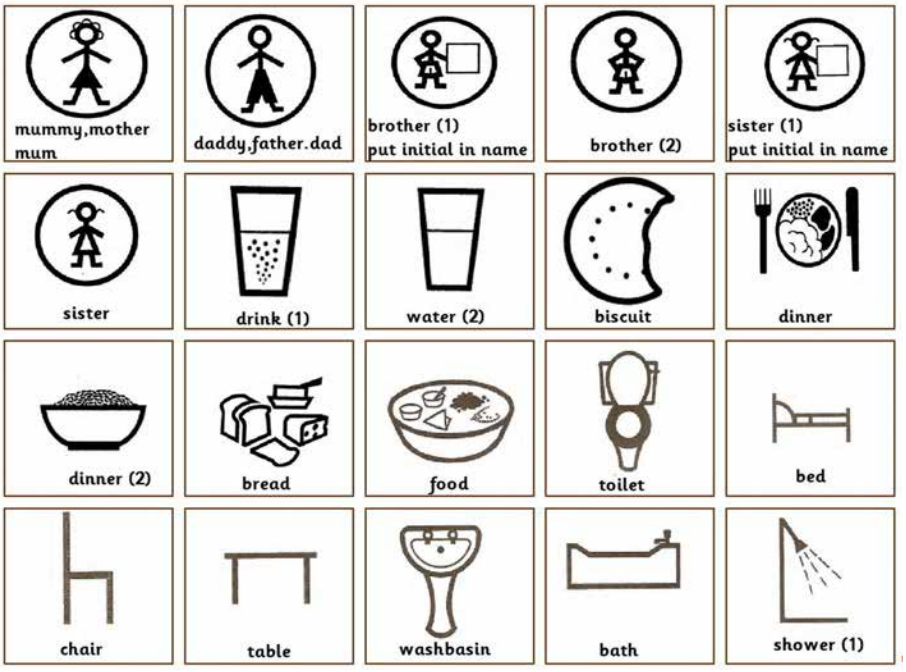


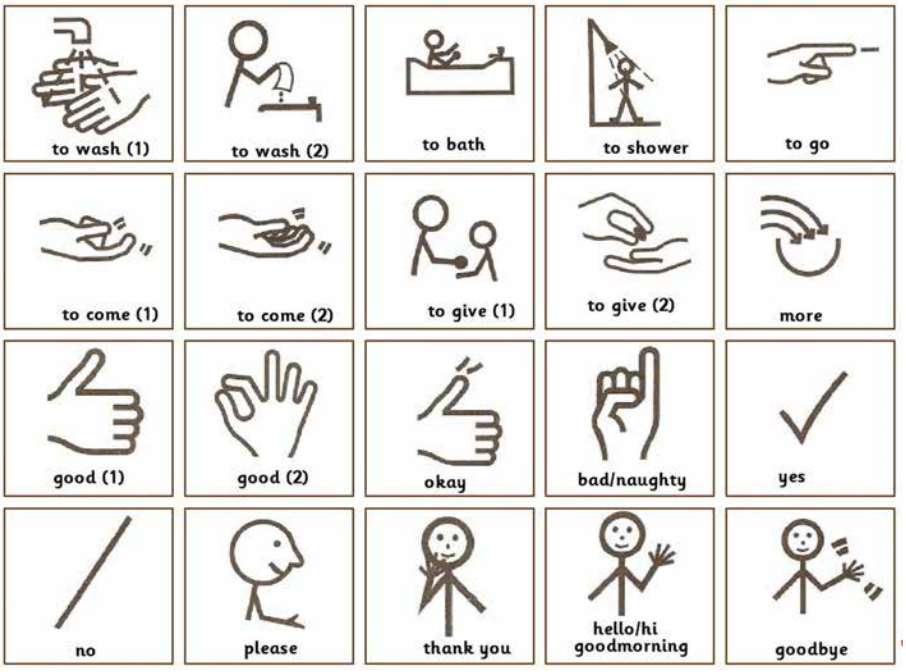


© The Makaton Charity 2008.

MAKATON is the registered Trade Mark and Service Mark of the Makaton Charity.

2. Makaton symbols



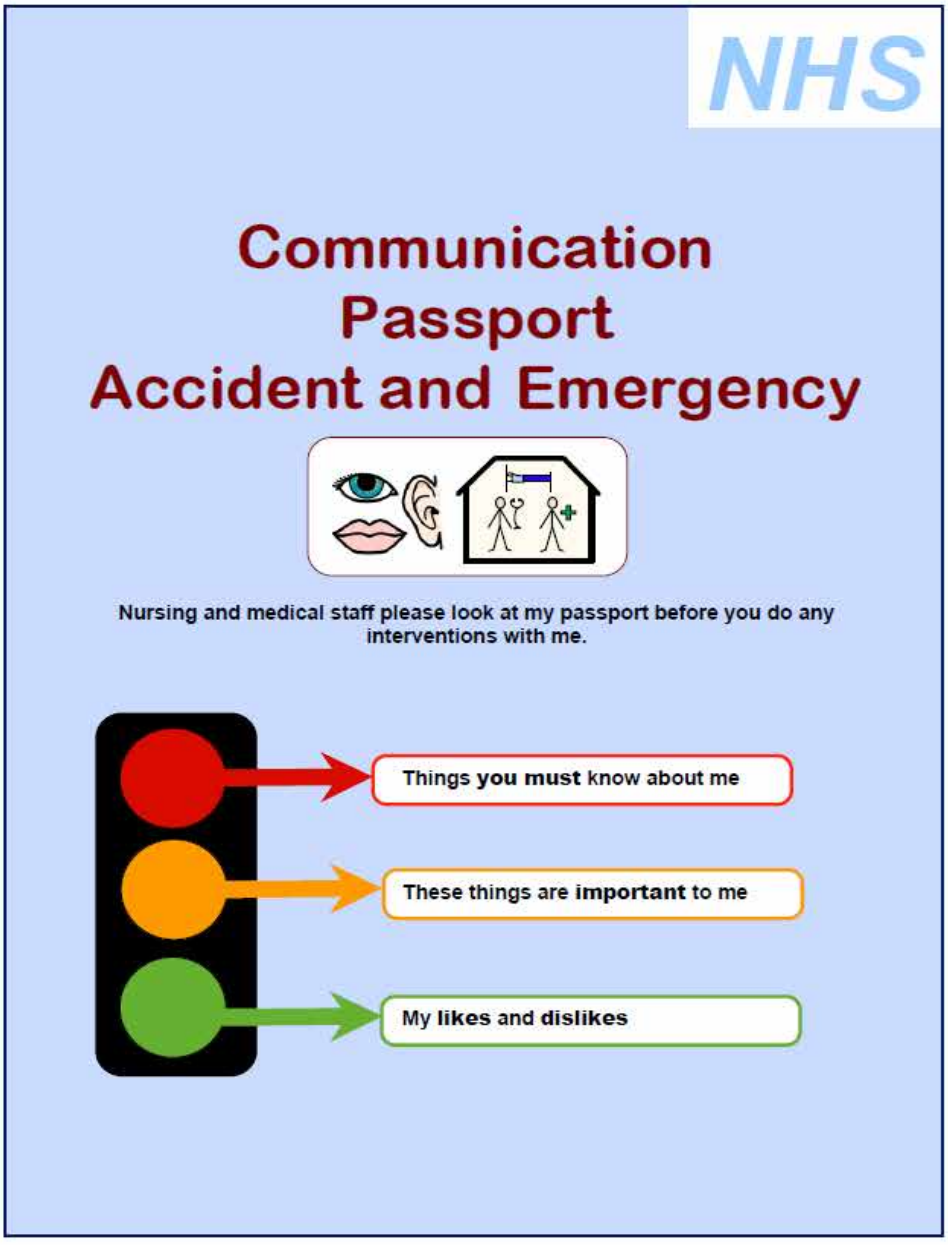


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Appendix 4

Widgit Symbols: Communication Passport



Things **you must** know about me



Name:

Likes to be known as:



Date of Birth:



Address:

No:



How I communicate/what language I speak:



Next of Kin contact:

Relationship e.g. Mum, Dad, friend or partner:

Address:

Tel No:



My support needs and who gives me the most support:



Who I live with:

Things you must know about me



Religion:

Religious needs:

Ethnicity:



GP:

Address:

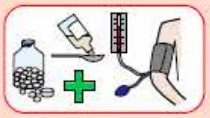
Tel No:



Other services/professionals involved with me:



Allergies:



Medical Interventions - how to take my blood, give injections, BP etc.



Heart/Breathing problems:



Risk of choking, Dysphagia (eating, drinking and swallowing):

Things you **must know** about me



Current medication:

My medical history and treatment plan:





What to do if I am anxious:

These things are **important** to me



How to communicate with me:



How I take medication: (Crushed tablets, injections, syrup)



How you know I am in pain:



Moving around: (Posture in bed, walking aids)



Personal care: (Dressing, washing, etc)

These things are **important** to me



Seeing/Hearing: (Problems with sight or hearing)



How I eat food: (Food cut up, risk of choking, help with eating)



How I drink: (Drink small amounts, thickened fluids)



How I keep safe: (Bed rails, support with challenging behaviour)



How I use the toilet: (Continence aids help to get to toilet)



Sleeping: (Sleep pattern/routine)

My likes and dislikes

Likes: for example - what makes me happy, things I like to do?

Dislikes: for example - don't shout, food I don't like, physical touch.

Things I like

Please do this:



Things I don't like

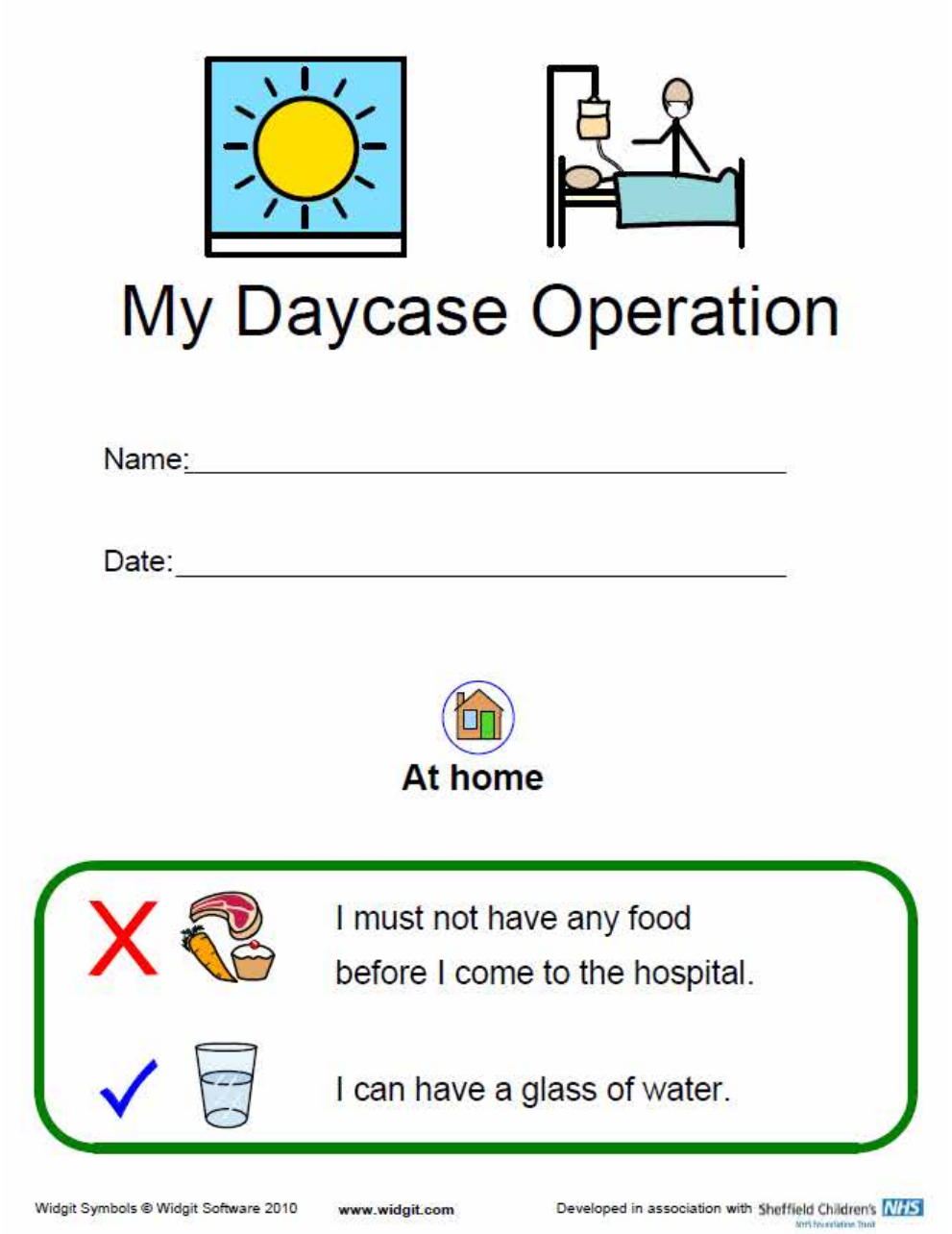
Don't do this:



Appendix 5

Widgit Symbols: Hospital procedures

1. Child Daycase Operation-booklet



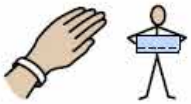
At the hospital



I will tell the receptionist when I arrive.



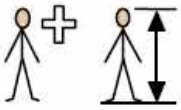
I will meet a nurse who will talk to me and my family.



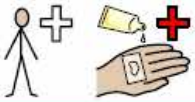
I will get a band on my wrist with my name on it.



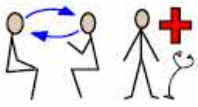
The nurse will weigh me on the scales.



The nurse will check how tall I am.

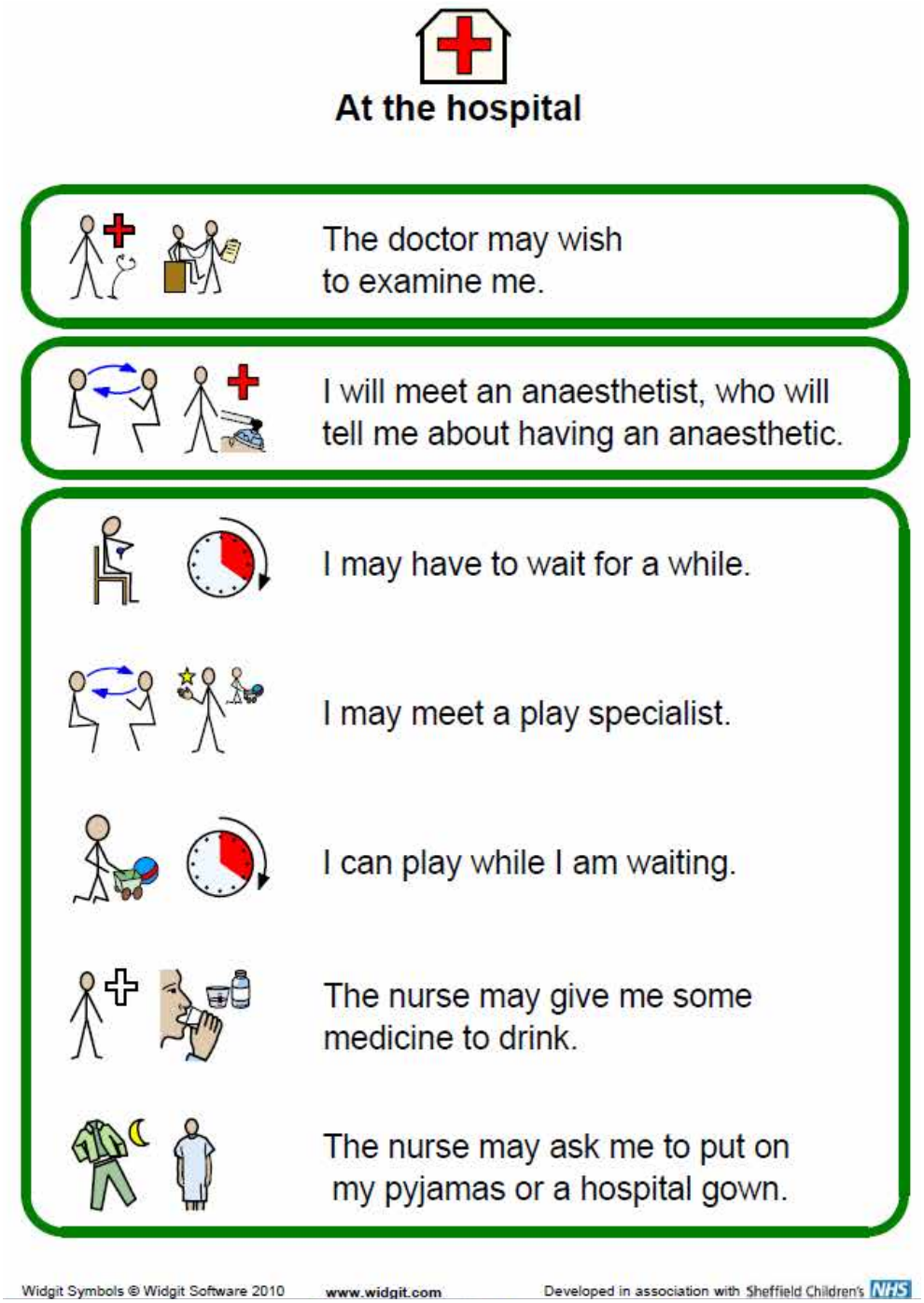


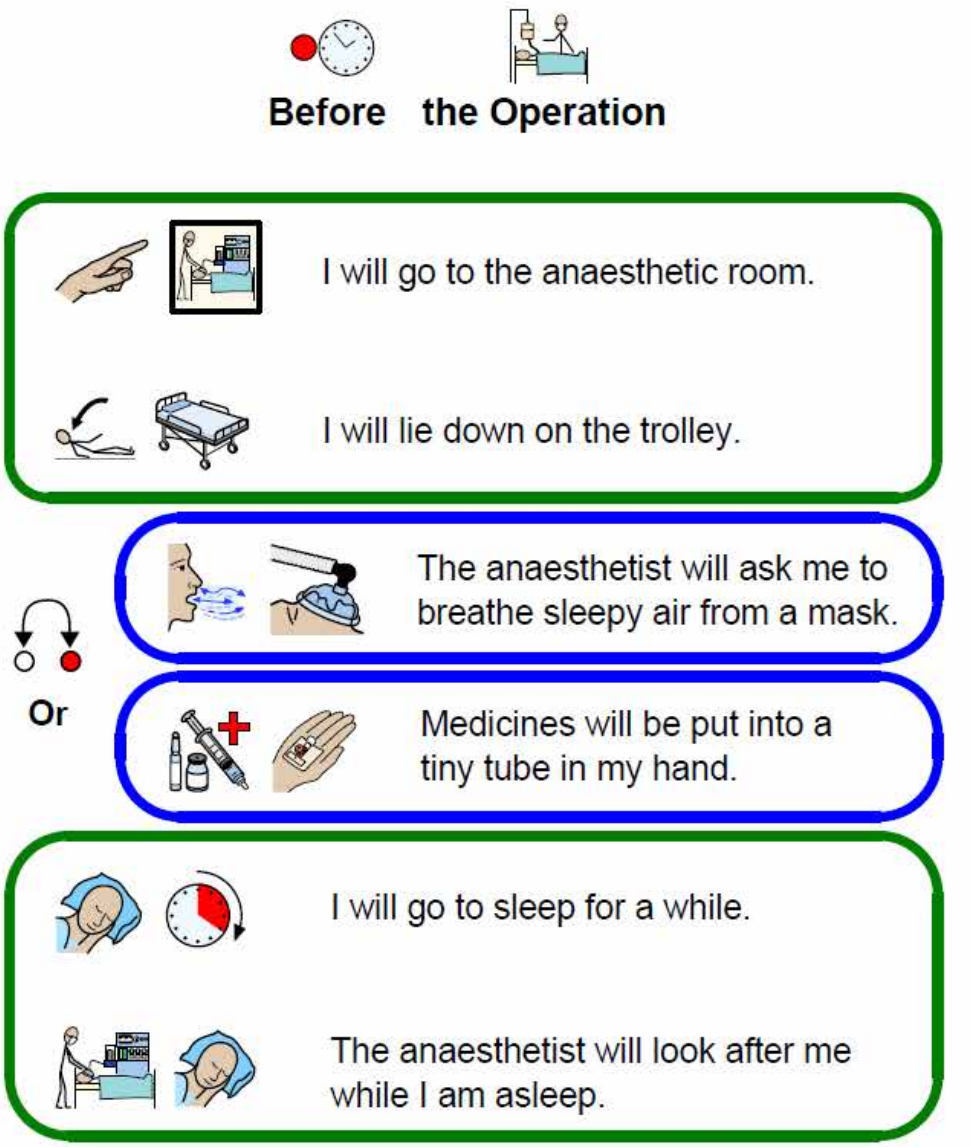
The nurse may put some magic cream on my hands.



I will meet a doctor.

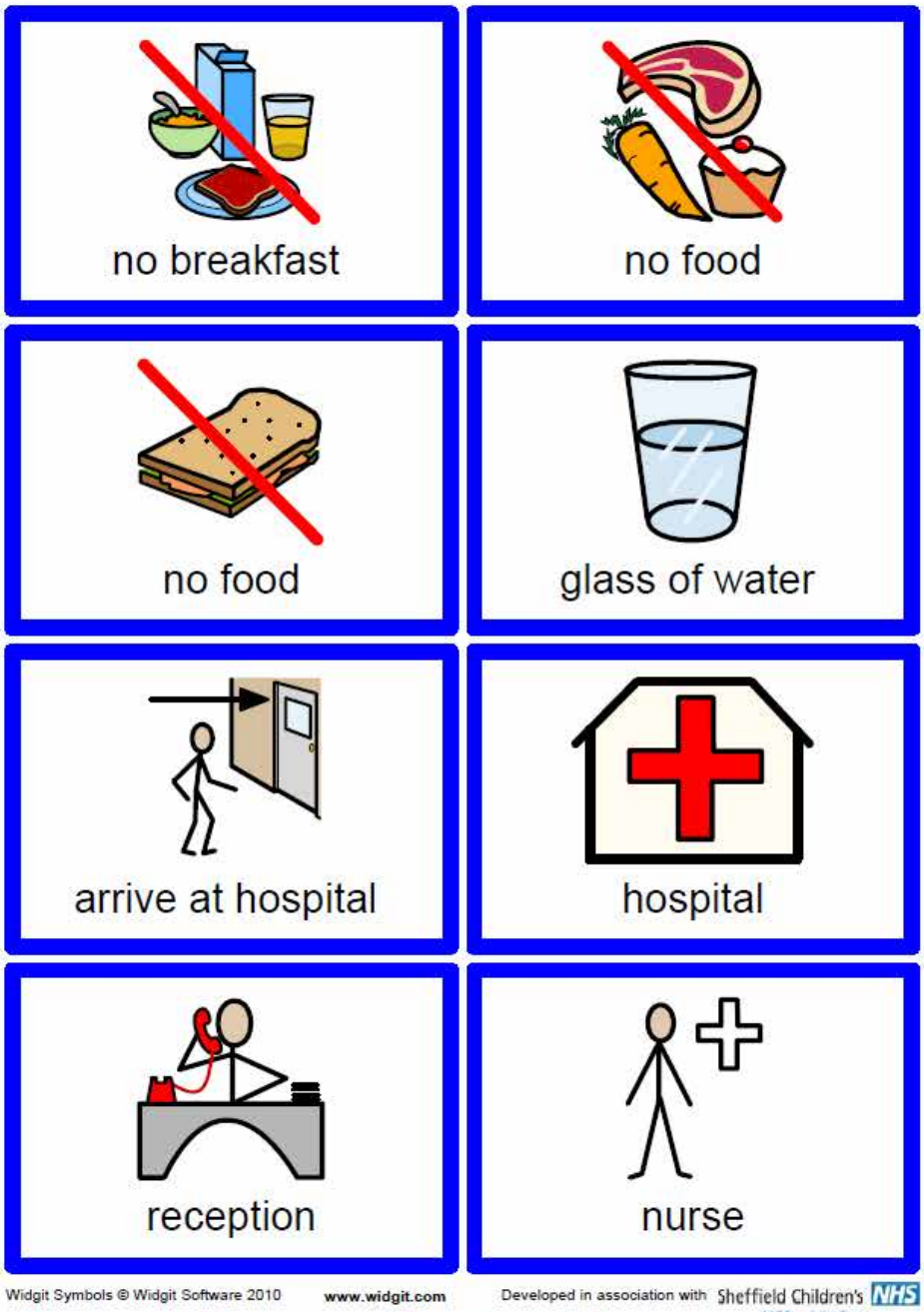
Widgit Symbols © Widgit Software 2010 www.widgit.com Developed in association with Sheffield Children's NHS

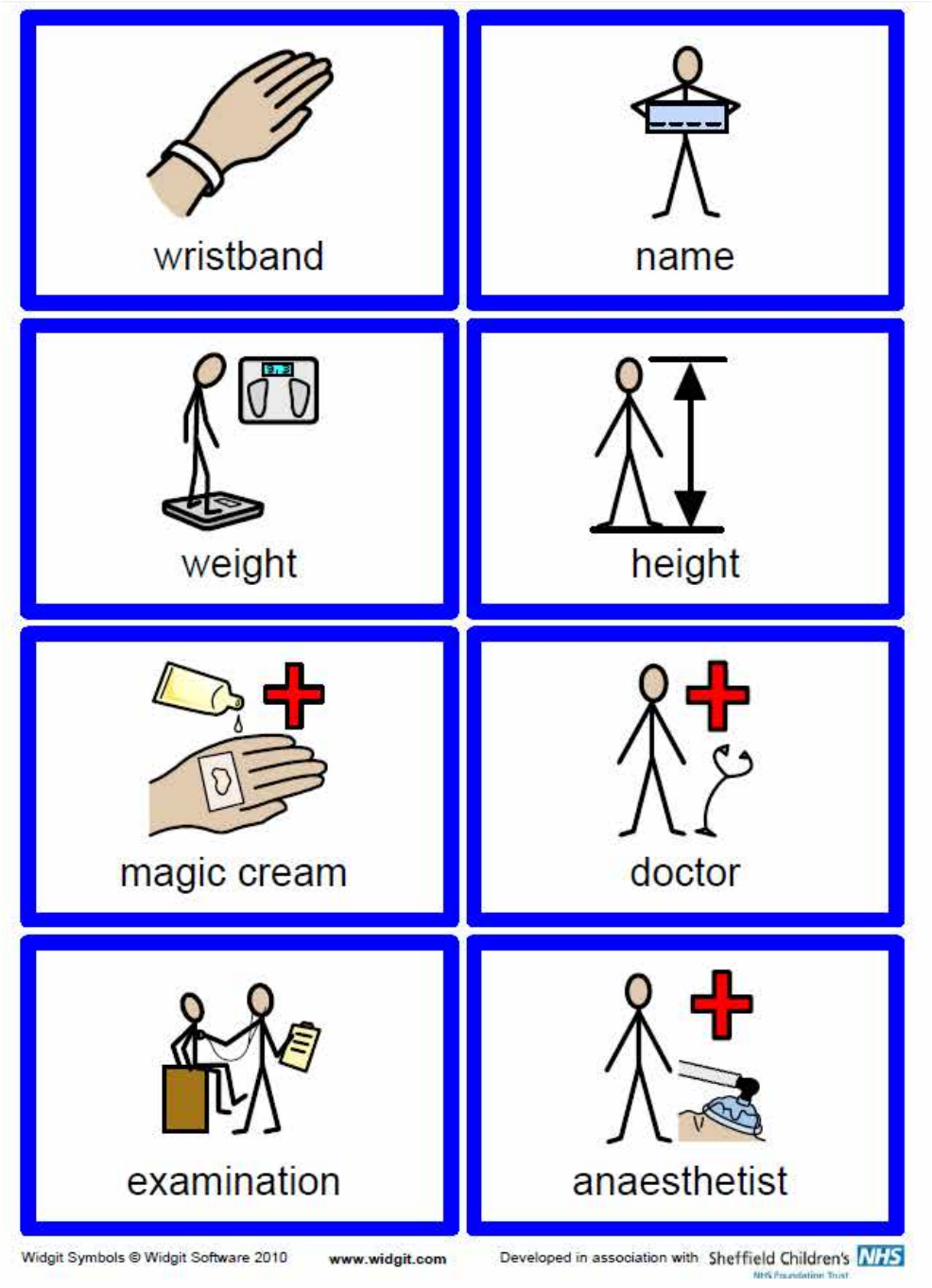

At the hospital
The doctor may wish to examine me.
I will meet an anaesthetist, who will tell me about having an anaesthetic.
I may have to wait for a while.
I may meet a play specialist.
I can play while I am waiting.
The nurse may give me some medicine to drink.
The nurse may ask me to put on my pyjamas or a hospital gown.
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Before the Operation
I will go to the anaesthetic room.
I will lie down on the trolley.
The anaesthetist will ask me to breathe sleepy air from a mask.
Or
Medicines will be put into a tiny tube in my hand.
I will go to sleep for a while.
The anaesthetist will look after me while I am asleep.
Widgit Symbols © Widgit Software 2010
www.widgit.com
Developed in association with Sheffield Children's NHS

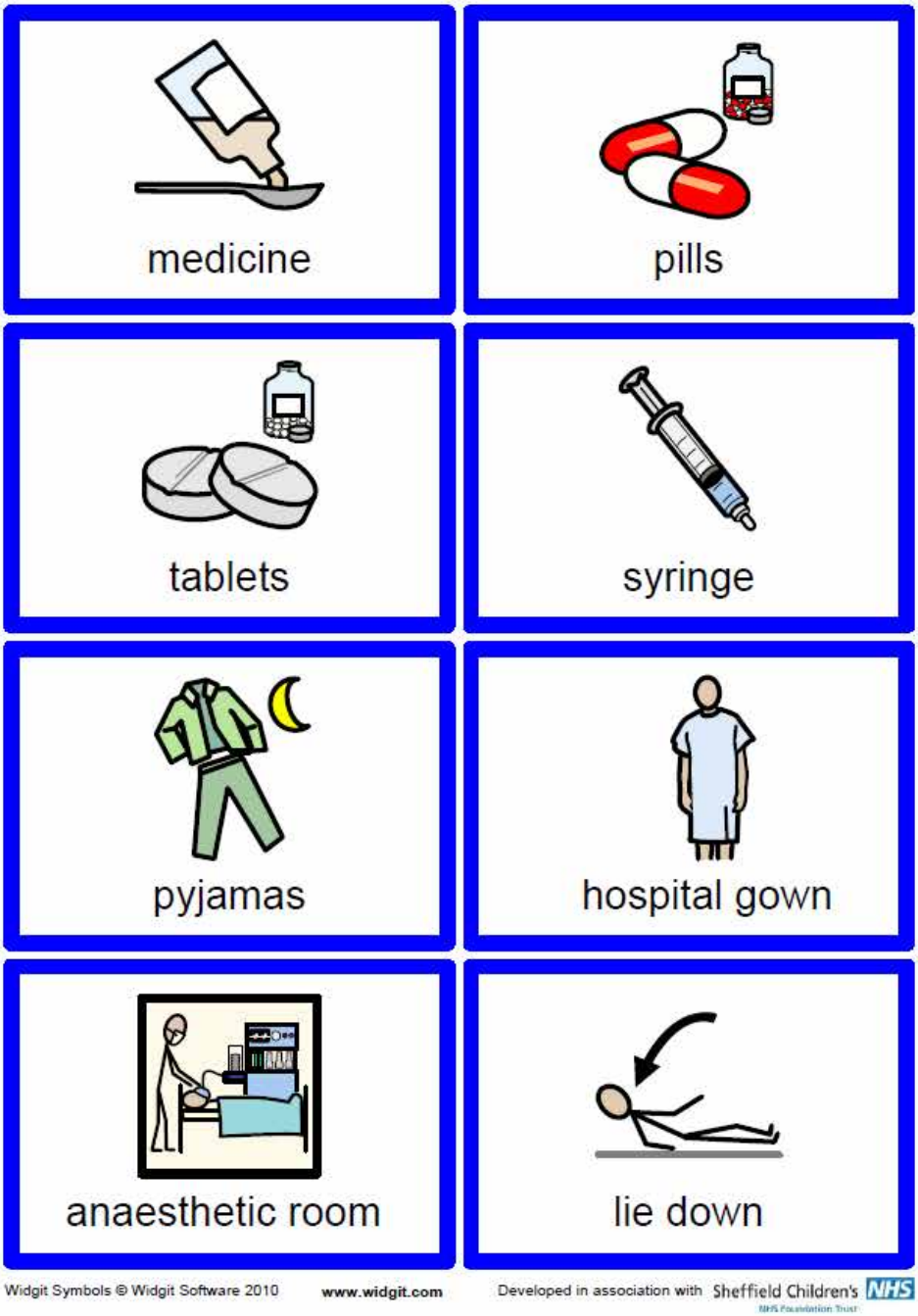

After the Operation
I will wake up after my operation.
The nurse will give me medicine if I feel sore or sick.
I can see my family.
I may have to rest for a while.
I can have something to eat or drink when I feel hungry.
The doctors and nurses will tell me when it is time to go home.
My family will take me home.
Widgit Symbols © Widgit Software 2010
www.widgit.com
Developed in association with Sheffield Children's NHS

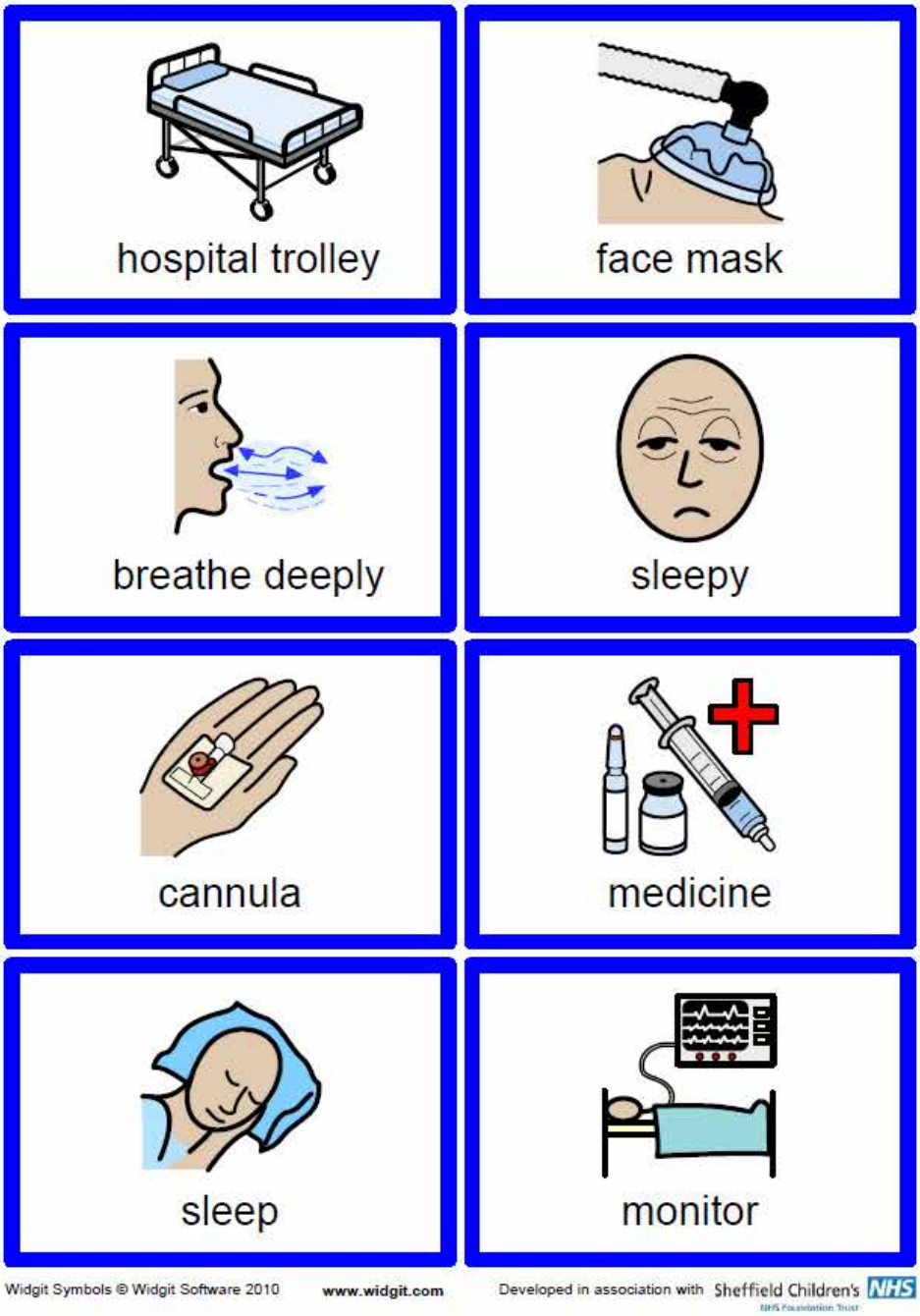
2. Child Daycase Operation-Flashcards

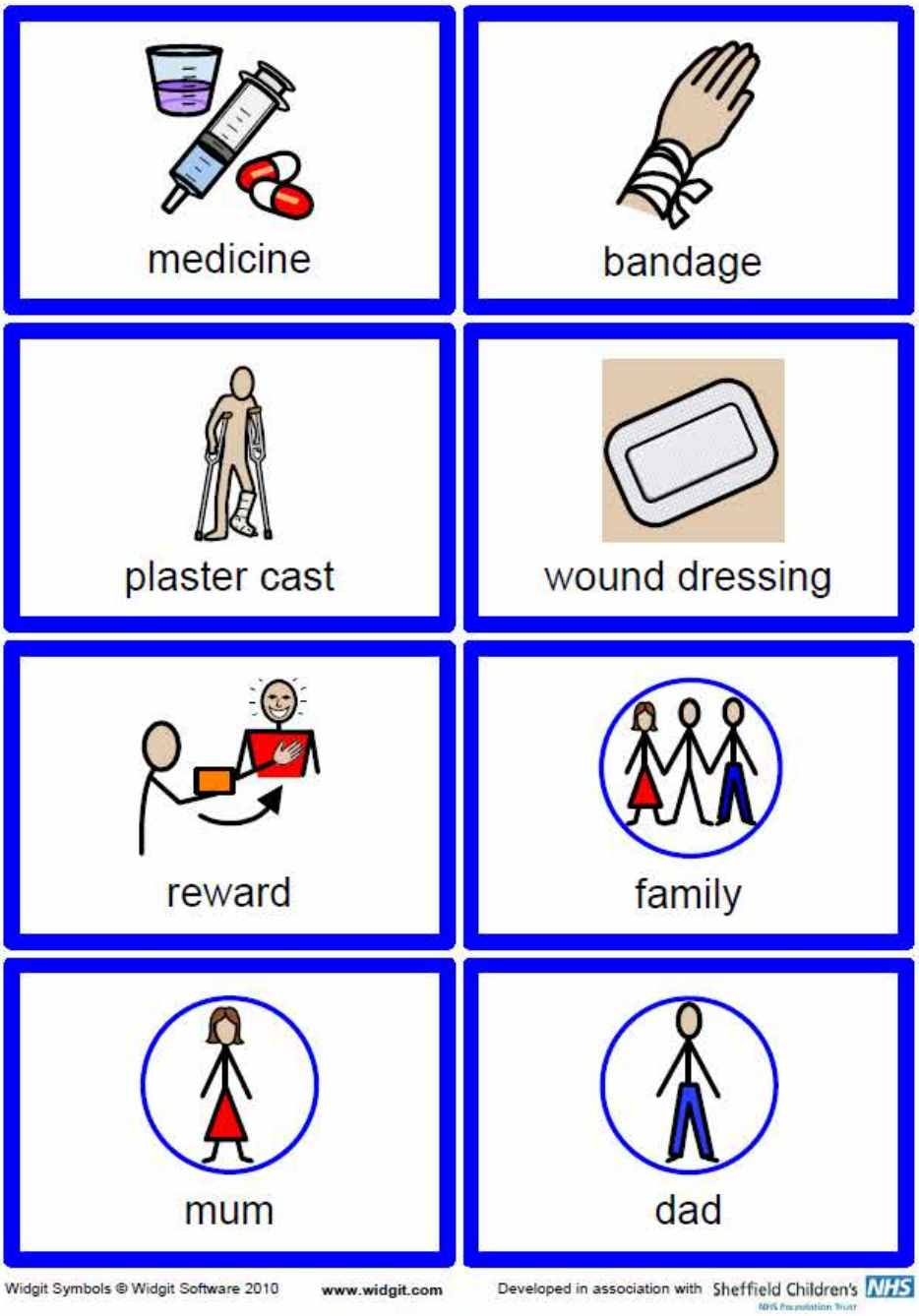


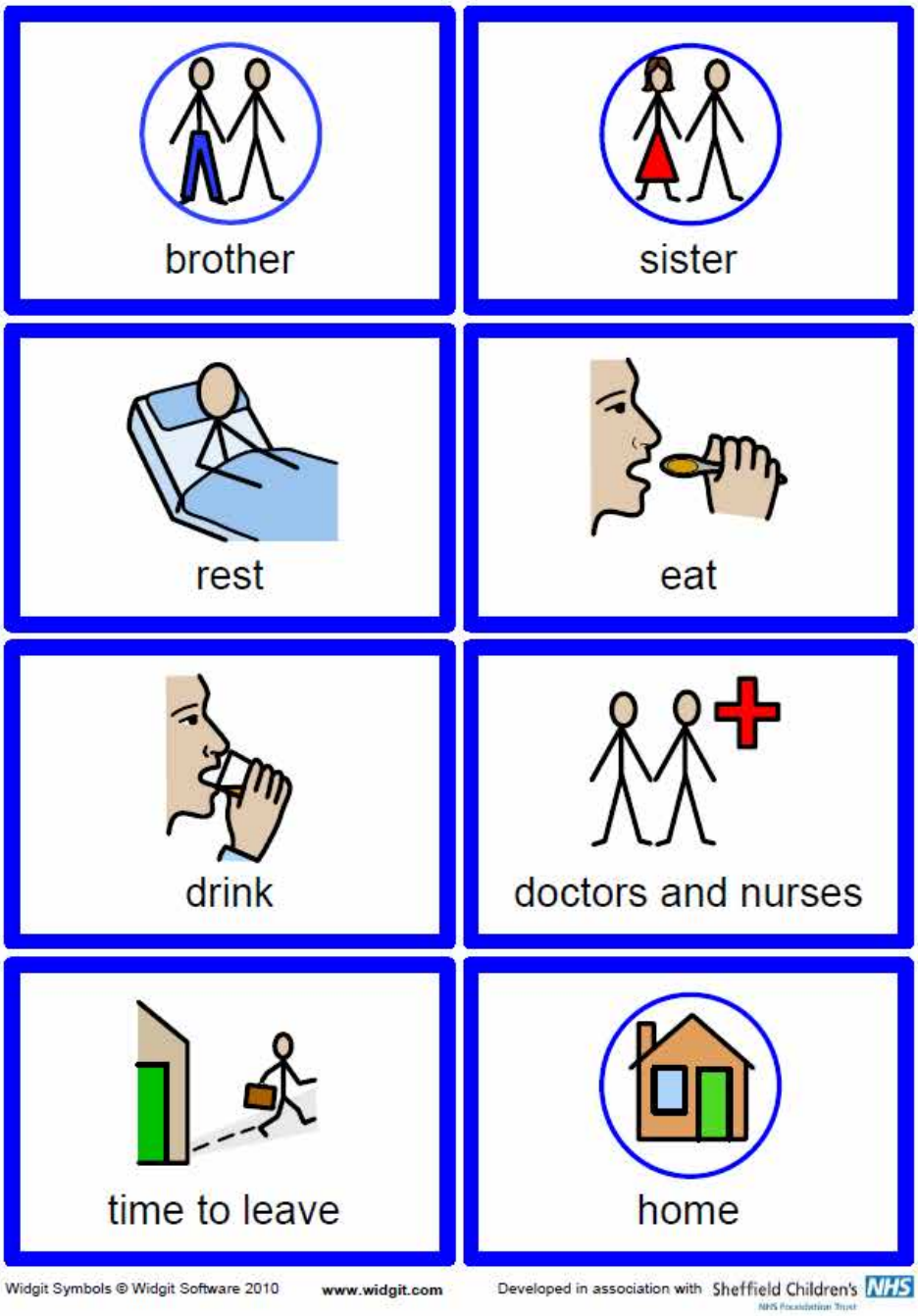

wristband
name
weight
height
magic cream
doctor
examination
anaesthetist
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wait
play specialist
play
nurse
medicine to drink
pills to swallow
tablets to swallow
medicine
Widgit Symbols © Widgit Software 2010
www.widgit.com
Developed in association with Sheffield Children's NHS

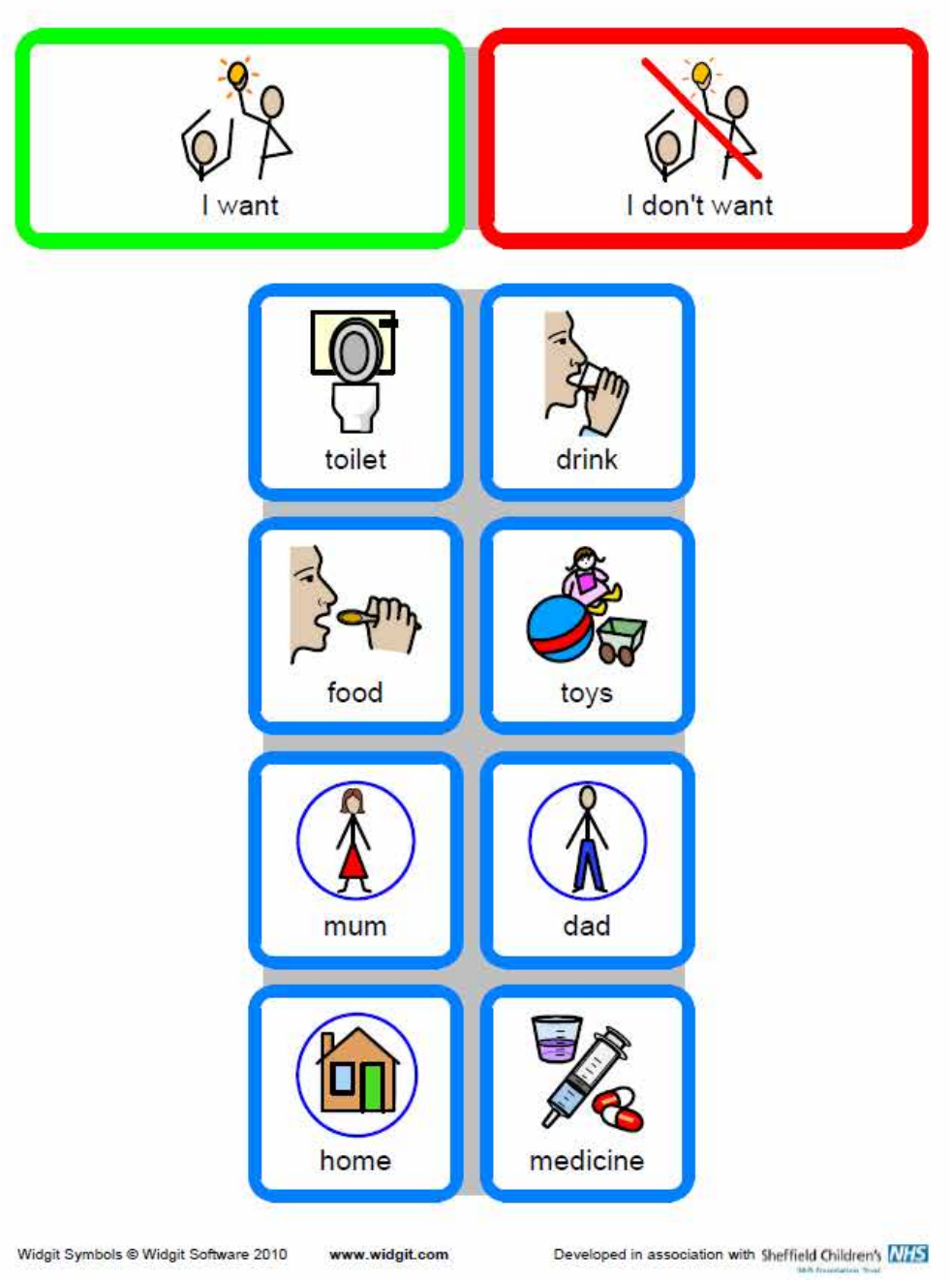

medicine
pills
tablets
syringe
pyjamas
hospital gown
anaesthetic room
lie down
Widgit Symbols © Widgit Software 2010
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Developed in association with Sheffield Children's NHS

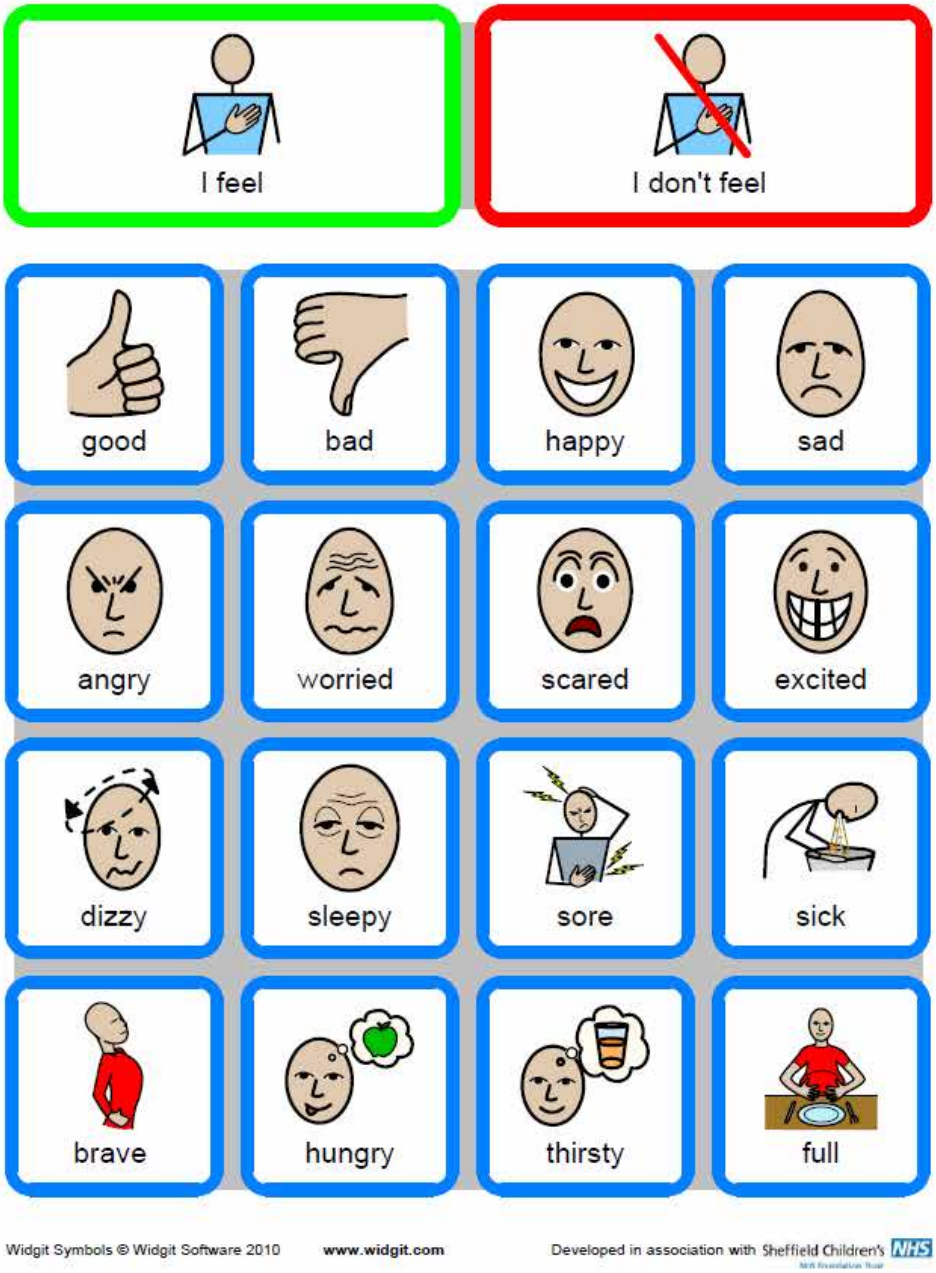

hospital trolley
face mask
breathe deeply
sleepy
cannula
medicine
sleep
monitor
Widgit Symbols © Widgit Software 2010
www.widgit.com
Developed in association with Sheffield Children's NHS


medicine
bandage
plaster cast
wound dressing
reward
family
mum
dad
Widgit Symbols © Widgit Software 2010
www.widgit.com
Developed in association with Sheffield Children's NHS


brother
sister
rest
eat
drink
doctors and nurses
time to leave
home
Widgit Symbols © Widgit Software 2010
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3. Child Daycase Post-Operative: Communication Chart




I feel
I don't feel
good
bad
happy
sad
angry
worried
scared
excited
dizzy
sleepy
sore
sick
brave
hungry
thirsty
full
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Appendix 7

Questionnaires

This questionnaire is part of a research project which assesses the knowledge of the paediatric dental team about Augmentative and Alternative Communication. You are asked to answer the questions, and please be as open and honest as possible.

Thank you for your cooperation.

A. Information about participants:

1) Have you worked before with children with communication difficulties? YES/NO
2) How many years have you been working with children with communication difficulties?

<5 >5 >10

3) How many children with communication difficulties did you often see in your practice per year?

0-5 5-10 10-20 20+

4) Have you had experience interacting with children with communication difficulties other than your dental practice? YES / NO

5) Would you attend a course aimed at helping you to communicate with special needs children? YES/NO
6) Did you receive any clinical training for treating patients with special needs or communication difficulties? YES/NO
7) How do you feel about communicating with children with communication needs in your practice?
   i) Very confident ☐ Quite confident ☐ A little lacking confident ☐ Very much lacking confident ☐
   ii) Very difficult ☐ Quite Difficult ☐ Quite easy ☐ Very easy ☐
   iii) Please mark how you feel about this on the scale below

Not confident ⟷ Very confident

B. Awareness of Augmentative and Alternative Communication (AAC)

1. What do you think AAC is?
2. Which groups can AAC be used with?
3. What types or examples of AAC do you know about?

4. What types or examples of AAC do you use in you practice?

5. Have you heard of the following?

	YES	NO
a) Makaton	☐	☐
b) Sign A long	☐	☐
c) British sign language	☐	☐
d) VOCA (Voice Output Communication Aids)	☐	☐
e) Communication Passports	☐	☐
f) Switches e.g. Big Mack	☐	☐
g) Widget software	☐	☐

4. Have you attended any training course in :

1. AAC (Augmentative and Alternative Communication) ☐
2. Makaton ☐
3. sing-along ☐
4. Picture Exchange Communication System (PECS) ☐
5. British Sign Language ☐
6. None ☐
7. Any other ☐

Please state

5. Why do you think AAC is important?

C. <u>Implementing AAC into Practice</u>

1. Do you usually speak with the parent or with the child or both about the following:

	Parent only	Child only	Both
(a) Diagnosis	☐	☐	☐
(b) Treatment plan	☐	☐	☐
(c) Procedures	☐	☐	☐

2. What strategies do you use in your practice to help in communication with children with communication difficulties?

	Occasionally	Often	Never

4. What types or examples of AAC do you use in you practice?

5. Have you heard of the following?

	YES	NO
a) Makaton	☐	☐
b) Sign A long	☐	☐
c) British sign language	☐	☐
d) VOCA (Voice Output Communication Aids)	☐	☐
e) Communication Passports	☐	☐
f) Switches e.g. Big Mack	☐	☐
g) Widget software	☐	☐

4. Have you attended any training course in :

1. AAC (Augmentative and Alternative Communication) ☐
2. Makaton ☐
3. sing-along ☐
4. Picture Exchange Communication System (PECS) ☐
5. British Sign Language ☐
6. None ☐
7. Any other ☐

Please state

5. Why do you think AAC is important?

C. <u>Implementing AAC into Practice</u>

1. Do you usually speak with the parent or with the child or both about the following:

	Parent only	Child only	Both
(a) Diagnosis	☐	☐	☐
(b) Treatment plan	☐	☐	☐
(c) Procedures	☐	☐	☐

2. What strategies do you use in your practice to help in communication with children with communication difficulties?

	Occasionally	Often	Never

(a) Asking parents about the communication mode used	☐	☐	☐
(b) Asking the child about the communication mode used	☐	☐	☐
(c) Ask about Communication Passport	☐	☐	☐
(d) Observing the child's non-verbal Communication	☐	☐	☐
(e) Use single word/short sentences	☐	☐	☐
(f) Non-verbal communication e.g. Pitch, volume, slowing down	☐	☐	☐
(g) Signs and symbols	☐	☐	☐
(h) Gestures	☐	☐	☐
(i) Drawings and graphics	☐	☐	☐
(j) MAKATON	☐	☐	☐
(k) Liaise with speech therapist	☐	☐	☐

D. Feedback

i. What impact do you think the training will have on your practice?

ii. What impact did the training session have on your attitude towards AAC?

iii. How useful was the training session today? Please mark on the scale below

Not useful ⟷ very useful

iv. Do you have any suggestions for future training sessions?

v. Please feel free to add any further comments here

Thank You for taking part

Appendix 8

Awareness of AAC: Responses to open questions

What do you think AAC is?		
Pre-training	Post-training	5-months Post-training
• Augmentative and alternative communication • Augmentative and alternative communication that uses different language other than verbal communication e.g. pictures and body language • A means of communication without words • Other way of communication instead of verbal • Basic sign language • Basic sign language • Means of communication in signs • Strategies for additional communication • A method used to improve communication with patients with disabilities • Signs and symbols • Alternative methods of communication, methods other than talking to communicate • Teaching dental staff about ways of communicating with special needs children, getting them to deal with these patients in the most efficient and effective ways • A way of understanding the needs of children who have communication problems	• Strategies for communication other than verbal • Awareness of AAC= alternative signs of language • A good set of tools to communicate with children with communication difficulties • It is the interaction and means of communication by using verbal and non-verbal communication • Supplement to communication • I think it is very important. Every paediatric dentist must learn AAC in order to communicate with children with special needs • Communicating by using hands, symbols and words • Using different means of communication • A way to communicate with children that have difficulty in communication • Alternative ways of communicating other than language only • A way of interacting with individuals with communication problems • Communicating through sings and. • Systems of symbols (+ some sounds) to assist in communicating • A way to interact with children with difficulty in communication	• Story boards, symbols, non verbal communication • Is an alternative form of communication to assist the special needs in interaction with other people • An umbrella term encompassing many systems of signs/symbols/techniques used to communicate language, concepts or ideas • Non verbal communication, types of sign language • A form of communicating with special needs children • Alternative and augmentative communication methods used to communicate with others instead of verbal communication • Augmentative audio communication, communication methods with special needs • A way to communicate with disabled children and those with communication difficulties • Way of communicating with children with communication needs • Methods used for communicating with children that have communication problems (cannot communicate verbally) • Augmentative and alternative communication • Methods and teaching skills needed to communicate with children and people with learning difficulties. Methods used to make communication possible and easier • Another way of communicating other than verbal • Using other forms of communication e.g. sign language

Which groups can AAC be used with?		
Pre-training	**Post-training**	**5-months Post-training**
• Preschool children • Children and adults with learning difficulties • Children/ adults with autistic spectrum disorder • Down's syndrome • Cerebral palsy • Children/adults with hearing impairment, speech impairment and learning difficulties • Children and adults with communication impairment +/- intellectual impairment and their relatives/ care-workers • Children with limited communication means	• Autistic spectrum • Children and adults with communication and learning difficulties • Cerebral palsy • Tracheostomy • Hearing impairment, visual impairment, and speech impairment	• ASD • Special needs patients with difficulty in communication • Sensory impairment, cognitive impairment, and learning difficulties • types of illnesses where signing will help • Globally delayed children/adults • Children who are pre-cooperative • Cerebral Palsy • Patient with physical disability • People with learning difficulty, hearing/visual impairment or anything that renders communication difficult

What types or examples of AAC do you know about?		
Pre-training	**Post-training**	**5-months Post-training**
• Body language • Sign language • Makaton • Visual aids • Sign language • Brill's language • BSL	• Makaton • SignAlong • VOCA • BSL • Communication passport • Widget software • PECS • Symbols • Pictures • Hand signs • Big Mack • Body language • Gestures • Aided and unaided AAC	• Makaton • BSL and ASL • Finger spelling • Aided and unaided communication • VOCA • Sign-along • Signs • Facial expressions • Sign language • Body language • Switches • Symbols • Pictures • Pointers and computer devices • Big Mack • Communication passport

What types or examples of AAC do you use in your practice?		
Pre-training	**Post-training**	**5-months Post-training**
• Visual aids • Minimum sign language • TSD (tell show do) • Some signs, • Some picture charts (occasionally) • Boards brought in by families • Body language • Speak slowly	• Makaton • BSL • I'll use Makaton • Simple signs • SignAlong • Body language • Gestures • Sign assisted language • Picture-boards or symbol lists if brought in by patients. Sadly do not keep any resources	• Makaton • BSL • So far, I have not yet got the chance to practice the AAC • Limited BSL • Finger spelling • Makaton • Picture boards when brought by family • Whatever is the best to deal with the patient needs • Body language • Pointing • TSD • Drawings • None • Sign language

Why do you think AAC is important?		
Pre-training	**Post-training**	**5-months post-training**
• You may think your communicating well, but patient may still have limited understanding; it is a way of communicating with patients with special needs to improve management • Makes the communication easier that will help in delivering treatment • To try and communicate with vulnerable children • It is important to communicate with special child who's having communication difficulties • For effective communication • To be able to treat all the patients • Knowledge on this subject will help to communicate with patient better communication with them • To instil confidence and trust in patients. To show empathy and concern for patients special needs • To communicate with patients • Compliance, concordance and understanding. All lead to more successful treatment outcomes • To help connect with these children; making treatment comfortable • Because paediatric dentists will have to deal with and treat special needs children	• Effective communication with all • Very important to communicate with communication difficulties, to gain trust and cooperation • To facilitate communication with communication difficulties • It simplifies communication and makes treatment better and as comfortable as possible • For effective communication • Because communication with these patients is very important part of the treatment process • To assist in communicating to children with learning difficulties • It is important to communicate with the patient, it will help with future development • To communicate with patients that are unable to comprehend and understand • To establish a good relationship with the child, it will make delivery of dental treatment easy • To aid effective communication between individuals • To communicate with patients with communication problems, and to socialise • In order to communicate with those unable to speak, so as to understand their environment • If a child patient understands what you want to do they are far more likely to cooperate. If a child/ patient cannot communicate their own feelings, we are missing out an important aspect of their life, well-being and clinical problems • In order to interact with all children	• In order to deliver effective health care • It helps us as dentists to try to communicate with special needs children • Removes barriers to communicate. Therefore, helps reduce the impact of disability. Understanding health needs and increases likelihood of successful outcomes • To communicate with patients who cant • Allows people to communicate and gives them a feeling of being a person in their won right • To allow communicate to grow between the clinician, patient and the parent leading to success in management and treatment • It will greatly help in behaviour management of patients with communication difficulties making dental treatment a better experience • Communication is a key to successful management and convincing the child to do the treatment • To provide proper and needed care for the patients • It helps in communicating with the child that will facilitate the delivery of good quality dental care. It builds a good relationship between the operator and the child • For effective communication • Because we need to communicate with special needs people • For better communication and it facilitates communication, reduces fear and anxiety • Because all forms of communication are necessary in order for patient to understand the treatment

Appendix 9

What impact do you think the training will have on your practice?	
Post-training	**5-months post-training**
• Improvement • I will always ask about what communication methods they use. I will try to use signs we've been taught as much as I can • Very helpful • Will help me with interacting children with communication difficulties • Will help me to be little more confident in treating patients with this disability as I can be able to communicate • Assist in communication • Help me to have better communicate with children communication problems • Improve the communication process • Able to be more confident communicating with these with learning difficulties • A lot! • More confident in communicating with these patients • Will improve my communication skills with children with communication difficulties • Help me communicate with these patients in simple way • Very useful, will support effective communication in surgery settings • I will try to learn better communication methods with these children	• Improve communication for child patient and dental care practitioner • Good impact if I can undergo proper training • Improve it • Allow me to communicate better • Be more aware of the different styles of sing language • To discuss communication aids with parent/carer • Help to communicate with this cohort of patients • I didn't see any patients with communication problems afterwards, but I think I'm more confident now to see these patients • Improve my communication skills and better treatment • It will improve my practice in dealing with children with communication problems • Improve communication • I think it made me aware of the variable modes available to communicate with children. I would seek for training sessions in the future • Try to take more courses and improve my non-verbal communication Allow me to use different modes of forms of communication and be more confident to do so.

Appendix 10

What impact did the training session have on your attitude towards AAC?	
Post-training	**5m post-training**
• Renewed enthusiasm for learning more about AAC, and perhaps getting some picture/sign cards made • I really think AAC is very important • Confidence gained by this session • Increase confidence • It showed me that if the method is properly used it can be of great benefit to both the practitioner and the patient • Improve knowledge • Seek better knowledge of the subject • More able to utilise other means of communication • To become more confident and positive • Opened my mind to it • Improve it • Good impact • Very positive • Helped me explore methods of AAC	• Very helpful and stimulatory • Made me want to learn more regarding AAC • Made me realise how little I know and how much I must learn/improve • Enlightened my understanding • Made me more aware of the way one communicates • A positive approach, an essential tool to improve management of children • Introduced me to some AAC methods. Further courses are required to enhance ability • I didn't know about Makaton, but now after knowing it, I think it would be helpful later in my practice • It's possible to communicate once you are properly trained • It changed my opinion; used to think it wasn't that important • Very interesting • I am keen to learn more about it now after the session • More attention should be oriented towards AAC • Increased my awareness to different techniques

Appendix 11

BSPD abstract for research prize

Providing Augmentative and Alternative Communication training to Paediatric dental team.

AbuRashed R.M.; Dr. Williams C; Prof. Hosey M.T

King's College London Dental Institute

Background: Approximately one percent of five-year-old children in England have complex and severe speech, language and communication needs. These children will often need to use Augmentative and Alternative Communication (AAC). Communication is a complex system by which people exchange and convey messages; this involves sending, receiving and interpreting messages. Verbal Communication plays an important role in the interaction between the dentist and the dental team and the child; effective communication can reduce dental fear and enhance cooperation. Even though AAC offers the potential for the children with complex communication needs to have improved interaction during the dental visit paediatric dentists do not routinely receive training.

Aims: To assess the knowledge of a paediatric dental team about AAC strategies and to report and evaluate the improvement following an awareness session.

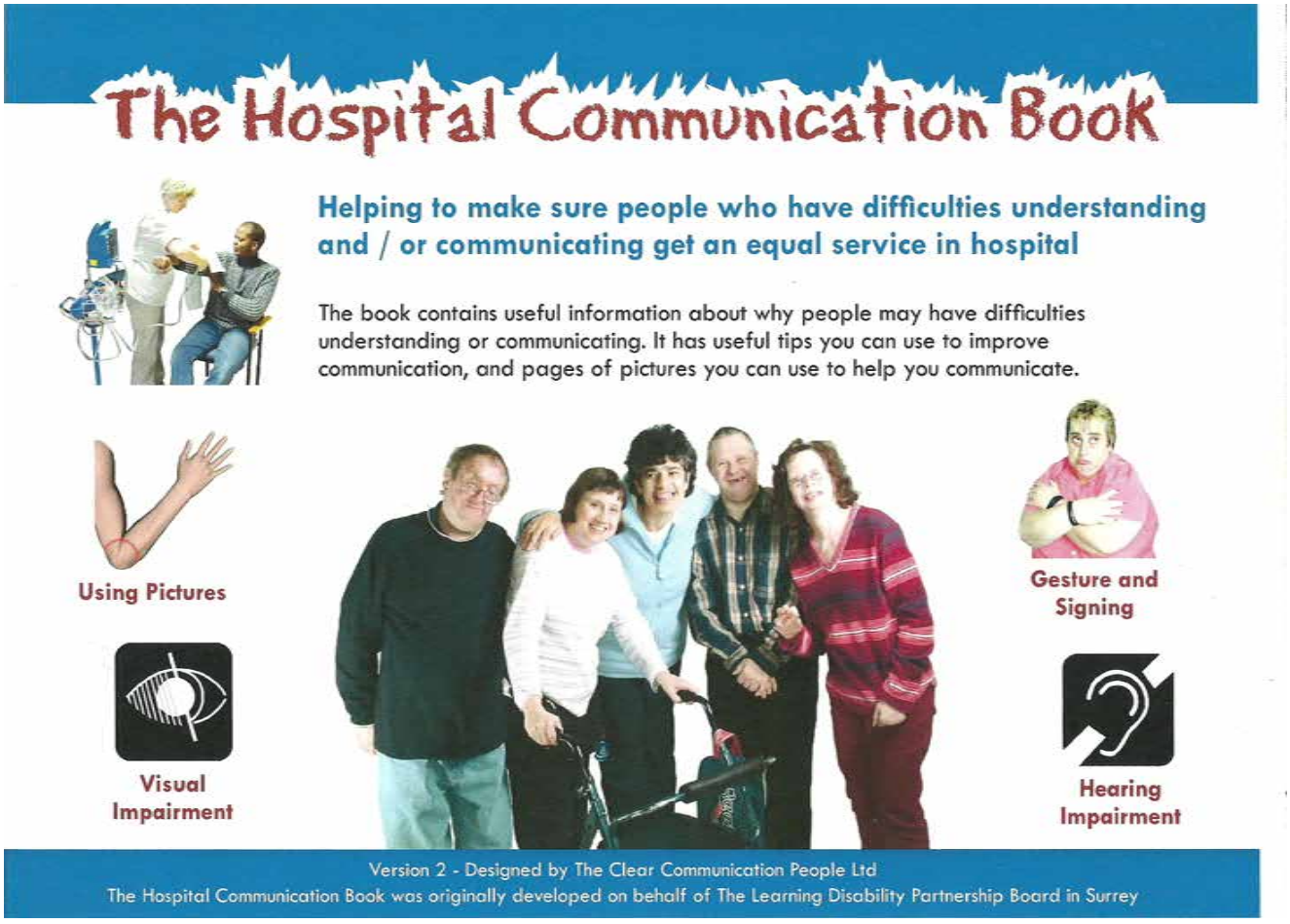
Methods: Fifteen participants from the paediatric dental department at King's College London based at Guy's Hospital took part in a session aimed at improving awareness. The participants answered a questionnaire before and after the session. This included open and closed questions and Visual Analogue Scales.

Results: There was a significant improvement in the participants' awareness of ACC (t-Test: p= 0.01). Participants showed enthusiasm for attending future ACC training courses.

Conclusion: The initial level of knowledge of ACC was poor. The session improved the paediatric dental team's awareness of ACC, increased team member confidence towards communication with children with complex and severe speak and language needs and highlighted the need for future formal training.

Appendix 12

Communication Book



Chapter 7

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