



How can Graphic Communication help those who have suffered from Otogenic Brain Abscesses (OBA)?

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1: Introduction

This report will explore the information, views, processes, support, etc. on Orogenic Brain Abscesses (OBA). OBA is a condition not many people know a lot about. I saw first-hand what the condition can do, and how it can affect the life of someone, as well as affect those around them. I found not much information was given about the condition and the life-changing consequences it can have.

The research would help gain more knowledge and understanding of how OBA can affect someone's life as well as those around them and investigates the views of not only the public but medical professionals themselves.

The aim of this investigation is to look in depth at what needs improving or supporting and to find areas that could be improved by the use of graphic communication. This will be done using primary and secondary research methods.

Objectives: To investigate into the public's views/thoughts regarding the condition by conducting a survey targeted towards people of different ages and genders. This will help to understand what the public's perceptions are as well as give more insight into their thought process; To review a wide range of literature to find out the process, support, awareness, improvements etc. regarding the condition.

This will help to gain more knowledge and insight; To investigate what the patients themselves go through and what effects it has on them and their families by conducting a series of interviews; To compare what support is available for the condition to other conditions by conducting a series of interviews and investigations; To investigate what students currently learning medicine know about the condition by conducting surveys; To identify, if any, the gaps that will help either the public, patients, families, doctors etc.

Through doing this investigation I want to show why OBA needs more support and awareness as it can affect so many lives and prove how far behind the condition is to every other condition regarding the support, public awareness etc. I want to show what the different thoughts and perspectives are regarding the condition as well as prove just how important and vital it is that we do something to help.

2: Methodology

In this investigation, a variety of research methods were used. Primary research was used to gather most of the information. This was due to lack of information online and in books.

Conducting Primary Research:

1

Interviews:

Interviews were carried out with a person and their family who have suffered with the condition. This helped gain insight and knowledge about what the condition is, how it affected them, the process they went through and what information was given to them etc.

2

Surveys:

A variety of surveys were also conducted to find out the different views and insights regarding OBA. Each survey was aimed towards a certain target group.

1

Electronic:

Survey 1 (Investigation into public's thoughts on OBA) was given to the public electronically. The survey was asked to 82 people, age and gender unknown. This was to find out what their views were regarding the topic, what they already know, how long they would wait to go to the doctors and if they would even go and do they think there is enough being done to raise awareness about the condition.

2

Paper Based:

Survey 2 (What information do you know about Orogenic Brain Abscesses?) was aimed towards people in the medical profession specifically the ENT doctors at the Princess of Wales Hospital. This was conducted with a paper-based survey and was completed by 5/6 individuals who work in that department. It aimed to gather the thoughts and information they had regarding the topic.

3

Secondary Research:

A variety of online medical journals, reports and articles were used which provided a wide range of resources to look at. I used Google Scholar, University of South Wales online library, newspaper articles, NHS website etc. to gather the information found. Although there was not much information, the information found was very beneficial. I wanted to find out what the condition was, what signs to look out for, what support was available, what age group and gender are most affected by the condition etc.



3: Research (3:1: Secondary)

Suligavi. S. S, etal. (2015), states that *“OBA is a life-threatening condition. Which requires early diagnosis and aggressive treatment”* the article also states that a *“combined approach by ENT surgeon and neurosurgeon reduces morbidity and mortality to a great extent.”* This is also confirmed by Duarte J. M, etal. (2018) who discussed how *“Otogenic Brain Abscesses are one of the most significant life-threatening complication of otologic infections. Given their low prevalence, Otogenic brain abscesses require a high index of suspicion for diagnosis.”* (P.1).

“OBA is a life-threatening condition. Which requires early diagnosis and aggressive treatment”

“Otogenic Brain Abscesses are one of the most significant life-threatening complication of otologic infections.”

The symptoms of OBA can vary person to person but there are some common symptoms that occur in almost all cases. This information can be found on the NHS (2019) website which states the *“symptoms of a brain abscess can include: a severe headache, changes in mental state, such as confusion, weakness or paralysis on one side of the body, a high temperature (fever and seizures (fits) which is usually treated using a combination of antibiotics and surgery”*. The article written by Duarte J. M, etal. (2018) also states that *“brain abscesses are commonly considered the second most common intracranial complication of otitis media after meningitis.”*

The systematic review also looks at the patient demographic of all the literature and studies investigated regarding the condition. It found that 'specific ages were not given in most studies. Where ages were available, patients ranged from 2 months to 76 years of age. A qualitative review of the data indicates that most patients with OBA were paediatric patients' (Duarte J. M, etal. 2018). The review also looked into the gender that OBA is more likely to effect and the results show that "gender was not routinely quantified. In papers where gender was available, gender ranged from 60% to 78% male." The review also found that there was a 'sharp decrease in mortality rates after the advent of the CT scan for diagnosis in 1977. The studies that explicitly recorded mortality before 1977 had an average mortality of 34.4%, while studies that recorded mortality after 1977 had an average of 8.11%.' The study also investigated the major complications found in each case and found that 'concurrent meningitis, brain herniation, and death were the major complications that were found across all studies. The long-term complications found included epilepsy, aphasia, visual disturbances, ataxia, hemiparesis, and facial nerve damage.'

The treatment/recovery time can last for months and can have serious effects not only on the patients but their families and friends also. '

'The duration of antibiotic treatment for brain abscess is usually at least 4 weeks.' This can be seen in an article written by Lusher. T. (2009) where he talks about his journey through symptoms, diagnosis, treatment, effects etc. he encountered. He said that "I had no idea I had a potentially fatal infection. Now, after my life-saving surgery, I will never take my health for granted again." Lusher. T. (2009) described his symptoms to the doctor and they diagnosed him with Labyrinthitis. This was repeated multiple times across a few days/weeks.

On the final doctors visit "someone realises something is horribly wrong. My GP sees immediately that my gait is clumsy, my focus wild, my speech slurring. She sends me straight to A&E.... and phones ahead to order a brain scan." He also discusses how his family felt and the impact it had on them. He stated that "For my family, the horror starts..... My parents rush to the hospital and my brother flies over from Hong Kong, leaving behind his pregnant wife..... My parents say goodbye, leaving P and my brother to shave me and to say their goodbyes as well, in case I don't come back from the operating table – or at least, not as the person they recognise..... My family pace the streets, killing the hours until there is news."



Through this all Lusher. T. (2009) stated that “I feel strangely calm, long past protest or concern, and relieved that some end to the sickness is in sight.” He explains his post-op treatment in depth. After everything he has been through, he states that “I’m still dizzy although the sickness is rarer.... Where does this leave me? The doctors think I will recover more or less fully, although no one likes to offer time spans. I have to face the possibility of living without perfect health. Perhaps I will have to adjust to disability.” He also told that he can’t help but ask himself “how will my work be affected? Can I deal with a frantically busy office? Will I cope alone with major travel? Can I keep my driving license? Will I ever feel comfortable running, climbing, cycling again? Even gardening?” He continued to discuss how the event had placed a terrible strain on his family, but also pulled them incalculably closer. He also discussed how the event had a positive impact on the way he now thinks. He stated “I feel more empathy with other people’s struggles..... I’m less inclined to fret about both the small stuff and the big challenges, more determined to rediscover what I love in life and enjoy it again for as long as I can.” He also ended with the statement “It has been a long road back, and I’m not there yet.”

The systematic review by Duarte J. M, et al. (2018) p.11 concludes “Otolaryngologists should have a high index of suspicion for Otogenic Brain Abscesses in patients.... Where warranted, prompt imaging may aid in more rapid diagnosis and treatment of OBA.”

“Where does this leave me?”

“How will my work be affected?”

“I feel more empathy with other people’s struggles”

3:1: Discussion

This research leads me to believe that it is vital to have an early diagnosis and aggressive treatment to reduce the morbidity and mortality rates around the condition. It is imperative that a high index of suspicion is important when diagnosing the condition due to having a limited amount of cases. So why wasn't Lusher. T. (2009) diagnosis made earlier? Through this study, I discovered that the symptoms of a brain abscess could resemble certain disorders, thereby making a correct diagnosis much more difficult. I also found the condition to be most common in young adults/children (paediatric) with most cases effecting males. This was rather surprising because I expected that the condition would affect more females than males. I also found that the mortality rates for the condition were falling significantly due to the advent of the CT scan. This had led me to believe that more and more people can survive due to earlier diagnosis and treatment due to this advancement of technology.

I was able to locate and narrow in on some important and crucial aspects while conducting this part of the investigation. This research leads me to believe that the support and lack of information makes it difficult to diagnose, treat and provide

proper care and guidance to those who have suffered from the condition and their families. Supporting the patients and their families during this time, as well as throughout their life, is vital as it can affect not only the patients physically but also mentally as well. Lack of awareness makes it difficult to diagnose as the public do not know how to spot the signs and symptoms. If this was available more lives could be saved due to a much earlier diagnosis. This can be seen through out Lusher. T. (2009) article. When completing this research, I found there to be lack of information on the condition. This made it difficult to spot and locate the positives and negatives regarding the condition.

However, the information found plays a vital role in improving and understanding the condition.

3:2: Primary (3:2:1: Surveys)

A paper-based survey (survey 2) was conducted at the ENT at the Princess of Wales Hospital in Bridgend. The survey was asked to 5 individuals of different stages in their career. 10 questions were asked to gather as much information as possible about the support they provide, what do they know about the condition, how many cases did they come across during their time, do they think enough is being done to support and raise awareness etc. The results of the survey are as followed:



Non/unaware

Q3: What support do you provide for patients & their families?

Ongoing ear care/surgery after brain surgery

Info on treatment & surgery

Further awareness of the condition

Medical support. Follow up

Fever, neurological symptoms and signs of ear problems

Q4: Do you know how to spot the signs?

ASOM Neuro signs - altered cranial nerves, blown dilated pupils if there is pressure

No, signs of infection or neurological deficits

Any neurological changes. Ear infection. Sign of brain abscess.

Look for signs of infection and neurological signs

1/2

Q5: How many cases have you come across?

21

None

Nil

None

IV antibiotics,
neurosurgical
consultation,
scans

**Q6: What
was the
outcome?**

Neurosurgeon
drained abscess.
Put on
antibiotics

N/A

Nil

N/A

Children

Young
adults

**Q7: What
ages are most
affected by the
condition...?**

N/A

Nil

No

**Q8: Do you
think there is
enough being
done to raise
awareness
about the
condition?**

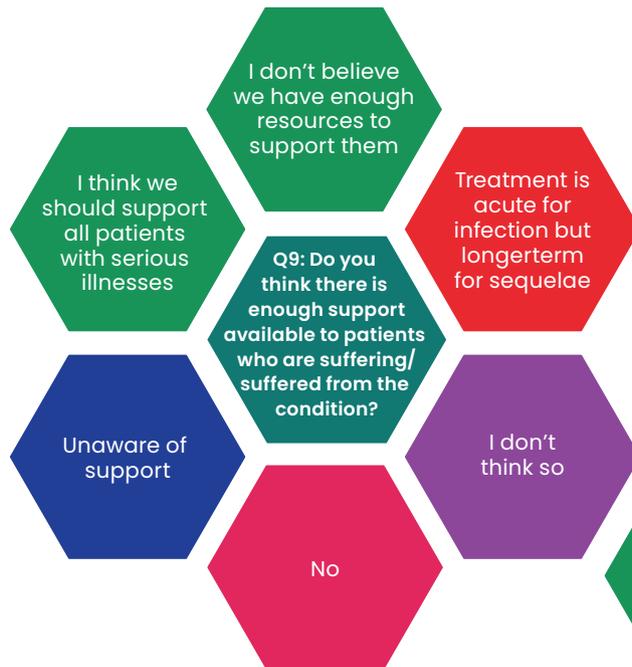
No

N/A

No

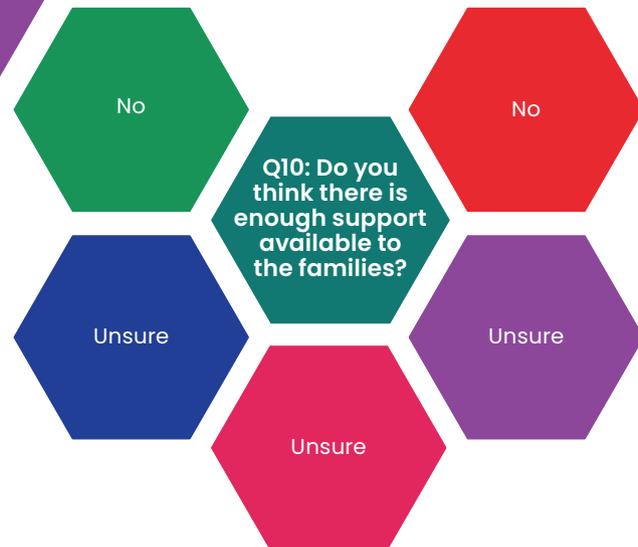
No

No



Conclusion/findings:
 This investigation leads me to believe that not all doctors etc. know about the condition but can make a guess at what it is by its name. This can be seen in Survey 2 question 1 where individual 2 stated that 'I've not heard about it before, but I would say brain abscess related to ear.' However, the survey shows more

doctors etc know about the condition compared to those who don't. Looking at the results of the rest of the survey I found that not much support is available to families and patients. Medical support is the focus but that is all the support available. I also became aware not many doctors etc. know what support is available to patients and their



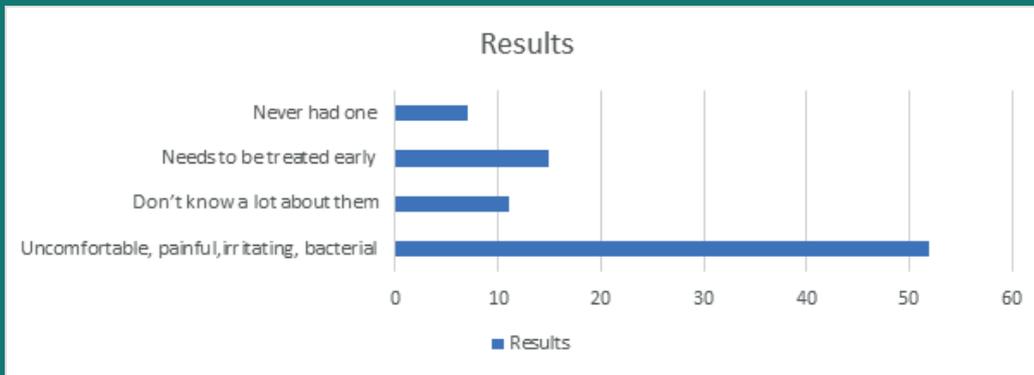
families. Looking at the responses from question 5 (Survey 2) I found that the number of cases doctors etc see is significantly low. However, this does not mean that the condition shouldn't be made more public. When asked Q9 individual 5 stated 'I think we should support all patients with serious illnesses, and I don't believe we have enough resources to support

them'. This leads me to believe through the lack of support resources it is difficult to support the patients and their families to the best they can. This is a gap that needs to be filled as it plays an important role in the patient's recovery and after care.

3:2: Primary (3:2:1: Surveys)

An electronic-based survey (survey 1) was conducted which was aimed towards the public. The survey was answered by 82 individuals, age and gender were not asked during the survey. 7 questions were asked to gather the public's view, thoughts, opinions and knowledge about the subject. The results of the survey are as followed:

Q1: What are your views on ear infections?



Never had one: 7, Needs to be treated early: 15, Don't know a lot about them: 11, Uncomfortable, painful, irritating, bacterial: 52.

Q2: Do you know all the risks regarding ear infections?

4%

21%

75%

Other: When used the feedback was that 'I do now but did not before. Found out through someone who had one of the risks involved.'

Yes: 21%, No: 75%, Other: 4%

Q3: Do you know what symptoms to look out for?

2%

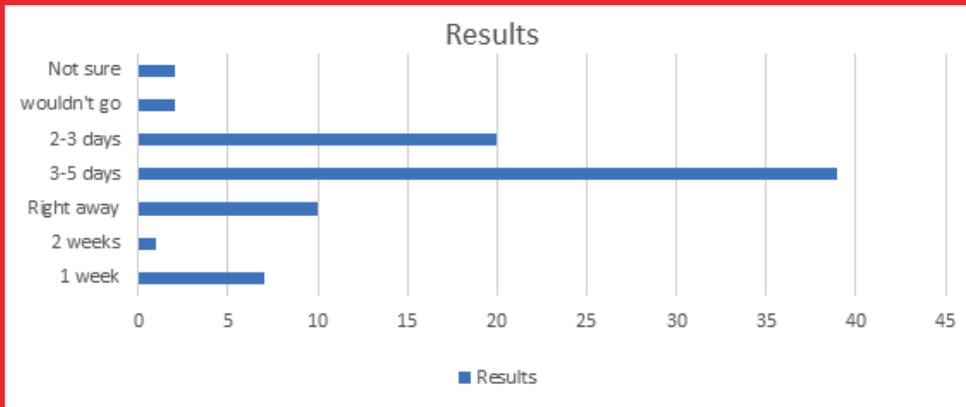
39%

59%

Other: When used the feedback was 'Now I do.'

Yes: 39%, No: 59%, Other: 2%

Q4: How long would you wait to go to the doctors regarding an earache/infection?



Not sure: 2, Wouldn't go: 2, 2-3 days: 20, 3-5 days: 39, Right away: 10, 2 weeks: 1, 1 week: 7

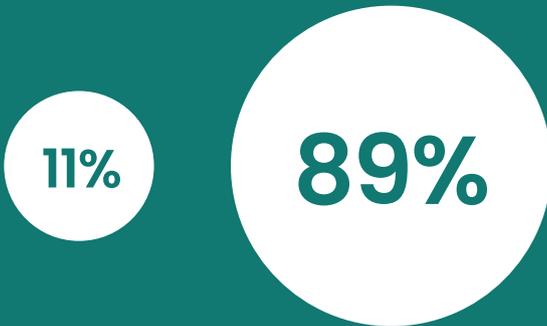
Q5: Would you go to doctors regarding an ear infection?

9%

91%

Yes: 75, No: 7.

Q6: Do you know anything about Orogenic Brain Abscesses? If yes, then what do you know?



Yes: 9, No: 73.

What do you know?

"I know they are a rare complication of ear infections and they can lead to death if not treated early."

"If left too long it can be deadly. It can leave you with epilepsy and short-term memory loss, mood swings, change in personality."

Q7: Do you think there is enough being done to raise awareness about the condition?



Yes: 4, No: 67, Unsure: 11.

Conclusion/findings:

I found through survey 1 that the public do not know all the risks regarding ear infections, and most do not know the symptoms. This led me to believe that due to this lake of knowledge the mortality rate of the condition is higher due to the publics lake of understanding. 89% of people do not know what the condition is and those that do only know due to a personal experience. The public also agree that not enough awareness is being done on the condition.



3:2:2 Interview (Patient/sufferer):

When interviewing with someone who has suffered from a brain abscess, I prepared a list of questions when going in, however I did leave some room for any additional questions that might come up during the interview. The interview was informal and held in a relaxing and comfortable environment. The results of the interview are as followed:



Interviewee name:

Michelle

Age: 41

Gender: Female

Question 1: Are you able to explain how you developed a brain abscess and some of the side effects that you encountered?

Answer: Ear infection which did not react to antibiotics prescribed by the doctor. The infection travelled up through the mastoid bone which caused a brain abscess on the frontal temporal lobe. The abscess was pushed between the brain and the skull which caused scaring which has now caused severe epilepsy.

Which then caused short term memory loss, difficulty with speech (means to say one thing but says something else) and understanding and gets agitated easily, headaches, tiredness, mood swings, loss of hearing, unable to drive or operate certain machinery, unable to be left alone, effect on mental health, Todd's Paresis (a focal weakness in a part or all of the body after seizure). If left untreated or found late could lead to death.

"People are scared to be around you. Loss of friends as they do not know what to do."

Question 2: Was there any support available?

Answer: Given a leaflet and nothing else.

Question 3: Was the leaflet informative?

Answer: No, just given a phone number to contact and a card to be kept on person all the time so if a seizure occurs outside people know what to do.

Question 4: What effect did it have on you and those around you?

Answer: Mental health: depression, anxiety, panic attacks, stress. People are scared to be around you. Loss of friends as they do not know what to do.

"Given a leaflet and nothing else."

Question 5: Can it be treated?

Answer: Yes, by surgery and/or a combination of high dose antibiotics.

Question 6: Duration of treatment?

Answer: Around 4 months but still has a constant effect on daily life. I was told by one doctor I would be in the hospital for two days but then neurologists said I would be in for weeks. Therefore, I was in for 7 weeks. I had the option of brain surgery and antibiotics. So, I decided to take the antibiotic option through an IV drip. I was on the antibiotics for weeks therefore my veins collapsed. When I went in for my ear operation to deal with the infection and to remove part of my mastoid bone, I woke

up with a IV needle in the main artery of my neck so I could have my antibiotics. It got infected after a couple of weeks so while I was awake, they removed the IV drip and put a new one in, which was very painful. A few days before I was discharged from Moriston Hospital, they put me on three different types of oral antibiotics. I then informed my neurologist of this new information and he informed me that I was on the right dose and to keep on taking them until further notice. That was when I had an MRI brain scan with blue dye in my veins and that showed that my abscess has gone however it has left me with scarring on two parts of my brain. That is when I stopped taking the antibiotics prescribed. When I was released from hospital, I was too scared I did not want to leave the hospital. I kept on visiting my GP and I was informed by the doctor there is nothing wrong with me, don't come back you are wasting our time.

Question 7: Did you know what you had?

Answer: No

Question 8: How was your experience with the doctors?

Answer: Not good in A&E or doctors' surgery. I wasn't good as I went to A&E due to extreme pain in head, double vision, my head was jerking from the pain and blood coming from left ear. All they did was give me antibiotics and was told to go home. I visited A&E multiple times. They even seen me bringing the antibiotics up and they still sent me home. Also called doctor out to my home due to room spinning and was unable to get up. He said I had vertigo and gave me more medication. A&E took me seriously when I went to work, and I was being sick, and blood was still coming out of my ear. My work colleague informed my husband of this. He then came to pick me up and took me straight to A&E again as I could not speak clearly and all I

was saying was yes. A junior doctor was studying the condition and he made sure I had MRI and CT scan which confirmed I had an Otogenic brain abscess. They then rushed me to Moriston Hospital neurology ward. For the first week there I could not remember a thing, not even my husband or children.

Question 9: How did you find out what you had?

Answer: A student doctor was studying the condition and spotted what it was and sent for an MRI scan.

Question 10: What symptoms did you have?

Answer: Severe stabbing pain in head, double vision, forgetfulness, unable to speak clearly, memory e.g. not remembering name, unsteady on feet, bleeding from the ear, severe ear aches, vertigo, unable to keep fluids down, people asking questions and was always saying yes and epilepsy.

Through conducting this interview, I found that not much support is available to those suffering from the condition. I also found how much this can affect a person's mental health. It can make someone scared of going out and being left alone. I also was able to find out the process someone with the condition went through and was shocked by the results. This process has significant similarities to the article in the secondary research section. Both cases show clearly what needs to be done and why.

Family:

Before interviewing family of the patient, I prepared a list of questions, however I did leave some room for any additional questions that might occur during the interview. The interview was informal and held in a relaxing and comfortable environment. The results of the interview are as followed:



Interviewee name:
Chelsea
Age: 21
Gender: Female

Question 1: How did having someone in your family suffering/suffered from OBA effect you?

Answer: Had to help when they were unwell, couldn't go out as much.

Question 2: Was there any support given to you?

Answer: No, not that I remember at the time.

Question 3: What would you improve?

Answer: The amount of information given, there wasn't much resources given.

Question 4: Did you know what signs to look out for?

Answer: No



Interviewee name:
Alan
Age: 49
Gender: Male

Question 1: How did having someone in your family suffering/suffered from OBA effect you?

Answer: Had to give up work to look after wife. Money got tight and had to be a carer for her.

Question 2: Was there any support given to you?

Answer: There was no support given to us.

Question 3: What would you improve?

Answer: I would improve support both financially, care and support.

Question 4: Did you know what signs to look out for?

Answer: No

Through conducting these interviews, I found just how much the condition itself can affect the patient's family. This research leads me to believe more needs to be done to support the patients and their families. It also shows how vital it is that more awareness is regarding the condition and its effects.



4: Discussion (4:1: Secondary):

Through completing the secondary investigation, I found that there was not as much information as I had hoped. I predicted I would not find a lot of information about the condition itself and the support given to patients and their families. This was confirmed. I did, however, find multiple reports researching and analysing different cases and studies to find the commonalities between them. When looking into different reports and articles I found 1 paper that combined all the studies into 1 and analysed them comparing commonalities and difference etc.

Through this research I found that the development of CT scans has decreased mortality and morbidity rates as they are able to find it earlier than pre-CT scans. However, I did find a gap in the support given to families and patient. This can be seen in Lusher. T. (2009) article. I also found that doctors had difficulty in diagnosing and spotting the signs of OBA.

I had hoped to have found more information about the condition and the support that is available however, the information I did find was very valuable as I was able to find some important gaps that need to be addressed, that would not only benefit patients and their families but also doctors and the public.

“the information I did find was very valuable as I was able to find some important gaps that need to be addressed”

4: Discussion (4:2: Primary):

Hypothesis: I predicted not many people would know a lot about the condition and the effects it can have. I believed that there would be little support and information for the patients and their families as well as the public and the doctors. I predicted that the doctors would know what support was available, what the condition is, etc. I also believed that the effects of having the condition would affect the mental and physical state of the patient as well as affect their daily lives as well as the lives of those around them.

Through doing this investigation I wanted to know:

- The views and opinions of the public. To find out what they know.
- To look into the doctors perspective looking into what they know about the condition, what support and advice to they provide, do they know the signs, do they think there is enough support and do they think there is enough awareness around the condition.
- What it is like going through the condition and the symptoms the individual had and the effects it had on them and their families. As well as look into the support given to them.

I found that not many people know about the condition itself and what signs to look out for. There is little/no support available to the patients and their families. There is limited resources available to the doctors to support and help the patients and their families. One stated that "I think we should support all patients with serious illnesses, and I don't believe we have enough resources to support them." Some doctors do not even know what the condition is. More needs to be done to raise awareness of the condition to the public and doctors about the condition. More also needs to be done to support the patients and their families through the diagnosis and treatment as well as the aftereffects it can have on them and their families. More information needs to be given to the patients and the families, so they know what is going on and what needs to be done.

5: Conclusion

To conclude, there is not enough information out there for people and doctors about the condition. There is little/no support available and little is being done to raise awareness about the condition. OBA can affect so many lives especially children/young people and their families. It can also affect people of any age. If more people know what signs to look out for the less fatalities and side effects would be seen. More support is vital as it can affect someone's life forever as well as those around them.

When looking at the information found, I found 3-4 areas/questions to develop a solution using graphic communication. The questions are as follows:

- 1) How can we raise awareness about OBA?
- 2) How might we better support people who are suffering/suffered from OBA?
- 3) How can we use graphic communication to help change the perceptions the public has regarding the risks/effects of ear infections?
- 4) How can graphic communication help raise awareness about OBA to the public and doctors to allow for early diagnosis?
- 5) How might we use graphic communication to not only raise awareness about OBA but also support patients/sufferers of the condition and their families?

Through looking at the information gathered, I found the most important aspect is to raise awareness and support those who have suffered/suffering from OBA. It is vital that this gap is filled as it would not only save lives but also help and support them and their families. It is a gap that needs to be filled in order to help everyone. It will not only benefit the patients and their families but also doctors as it helps them to support patients in hospital as well as provide after care to patients and their families effectively.

That is why my final research question is:

How might we use graphic communication to not only raise awareness about OBA but also support patients/sufferers and their families?

I have personally seen the effects the condition has on someone's life as well as seen how it affects those around them. I have personally witnessed the lack of support available as well as lack of information given by doctors to patients and their families. I f had not witnessed this then I would never have known about the condition and how much needs to be done to help those suffering.

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