

CASE REPORT ARTICLE

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Acute Suppurative Otitis Media in Children with Risk Factors of Recurrent Upper Respiratory Tract Infection, Non-Exclusive Breastfeeding, and Working Mother

Otitis Media Supuratif Akut pada Anak dengan Faktor Resiko Infeksi Saluran Nafas Kekambuhan, ASI non Eksklusif, dan Ibu yang Bekerja

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ABSTRACT

Background: Many factors influence Children's health, including the mother's employment status and exclusive breastfeeding. **Purpose:** To present the case of children with OMSA (Acute Suppurative Otitis Media) and several risk factors for recurrent upper respiratory tract infection (URI), not getting exclusive breastfeeding, and working mothers. **Case:** A boy, one-year-old and four months, came to the family doctor's clinic with his mother. They were complaining of discharge from his right ear. The fluid has come out from the right ear since seven days ago and does not smell. He had a recurrent cold previously. He only gets exclusive breastfeeding for two months, and the mother was busy with work. On examination, there was a central perforation on the right ear tympanic membrane. He was treated with antibiotics and decongestants, then turned to an ENT specialist. After a home visit at two weeks of therapy, the tympanic membrane was closed. **Conclusion:** The importance of controlling risk factors to prevent recurring ASOM.

Keywords: ASOM, risk factors, working mothers

ABSTRAK

Latar Belakang: Kesehatan anak dipengaruhi oleh banyak faktor, salah satunya adalah status pekerjaan ibu dan pemberian ASI eksklusif. **Tujuan:** Untuk menyajikan kasus anak dengan OMSA (Otitis Media Supuratif Akut) dengan faktor resiko ISPA berulang, tidak mendapatkan ASI eksklusif, dan ibu yang bekerja. **Kasus:** Seorang anak laki-laki berusia 1 tahun 4 bulan datang dengan ibunya ke klinik dokter keluarga dengan keluhan keluar cairan dari telinga kanan. Keluar cairan dari telinga kanan ini sejak 7 hari yang lalu dan tidak berbau. Sebelumnya pasien mengalami pilek yang sering kekambuhan. Pasien hanya mendapatkan ASI eksklusif selama 2 bulan, dan Ibu sibuk bekerja. Pada pemeriksaan didapatkan perforasi sentral pada membrane timpani telinga kanan. Pasien diterapi dengan antibiotik dan dekonjestan, kemudian dirujuk ke dr Spesialis THT. Setelah dilakukan homevisit pada 2 minggu terapi, didapatkan membrane timpani sudah menutup. **Kesimpulan:** Pentingnya pengendalian faktor resiko untuk mencegah OMSA berulang.

Kata Kunci: OMSA, faktor resiko, Ibu bekerja

Cite this as:
Amaliyah Putri, R., & Hidayati, N. (2022). Acute Suppurative Otitis Media in Children with Risk Factors of Recurrent Upper Respiratory Tract Infection, Non-Exclusive Breastfeeding, and Working Mothers. *Jurnal Ilmu Kedokteran Keluarga*, 1(2):38-44. <https://doi.org/10.56674/altera.v1i2.8>

Introduction

Otitis media is inflammation of the middle ear mucosa, Eustachian tube, mastoid antrum, and mastoid cells (1,2). Otitis media is classified into suppurative otitis media and non-suppurative otitis media, such as serous otitis media, secretory otitis media, mucinous otitis media, and otitis media with effusion/OME. Then it is classified into acute and chronic (1). Acute suppurative otitis media (ASOM) is an acute inflammation of the ear caused by pyogenic bacteria (3).

The peak incidence of ASOM occurs between the first six and twelve months of life and declines after age five. Approximately 80% of all children will experience a case of ASOM during their lifetime, and between 80%-90% will develop otitis media with effusion before school age. Otitis media is less common in adults than in children. However, it is more common in specific sub-populations, such as those with recurrent otitis media, cleft palate, immunodeficiency, or immunocompromised status (4).

Acute Suppurative Otitis Media (ASOM) often occurs in infants and children from lower socio-economic

backgrounds. Furthermore, it is caused by a viral infection of the upper respiratory tract, which then causes pyogenic bacteria to invade the middle ear. The most common causative organisms in infants and children are *Streptococcus pneumonia* (30%), *Haemophilus influenza* (20%), and *Moraxella catarrhalis* (12%). Other causes are *Streptococcus pyogenes*, *Staphylococcus aureus*, and sometimes *Pseudomonas aeruginosa* (3).

The risk factors for ASOM are age, recurrent respiratory infections, and allergies. Working mothers particularly affect their children's overall growth and development. The first five years of life are crucial for children's cognitive, affective, social, emotional, and psychomotor development. In the early years of a child's growth, proper attention and affection from the mother are needed to strengthen the child's trust so that the child can easily share any problems with his parents in the future (5). This article presents the case of ASOM with risk factors for recurrent respiratory infections, not exclusive breastfeeding, and working mothers.

Case

Anamnesis

A male child, a Muslim, one-year-old and four months, came to family doctors with his mother with a chief complaint of ear discharge seven days ago. The ear discharge from the right ear was yellow, liquid, and odorless. Fluid always comes out when the patient sleeps on his right side. The patient often wakes up and is fussy every time he sleeps because he feels uncomfortable with his ears. These symptoms were felt to be getting worse. The patient has been given antibiotics but often forgets to give them because his mother works. The mother cleaned his outer ear with cotton, but the fluid was still coming out. He never got this discharge before. Two days before he had ear discharge, he had a runny nose. He often experiences these colds every month or bimonthly. There were no symptoms of sneezing due to cold or dust, decreased smell, nosebleeds, history of trauma, congestion, odor, pain in the facial area, double vision, symptoms in the throat, nausea, vomiting, cough, and fever. The patient only drank breast milk until he was two months old. Now he drinks formula milk because his mother suffers from gallstones and feels pain when breastfeeding him.

After gallstone surgery, breast milk cannot come out. He has no history of dust and food allergies, but the mother has an allergy to shellfish and dust. There was no history of maternal birth disturbance. The patient was born in the hospital at 3500 grams in weight and 45 cm in length, and there were no abnormalities at birth. The mother was 28 when she gave birth to him and routinely controlled ANC at the obstetrician. There was no history of growth and development disturbance (according to the developmental pre-screening questionnaire/KPSP). The

patient's history of immunization was complete. There were no complaints in other organs.

Physical Examination

Good nutritional status (Weight was 12 kg (0 to 2 SD), Height was 83 cm (0 to 2 SD), weight/height was 17.4 (0 to 1 SD), upper arm circumference was 15 cm (0 sd 1 SD), head circumference was 47 cm (0 SD). Vital signs was 456, heart rate was 112 x/minute, regular strength, respiratory rate was 24 x/minute, SpO2 was 99% on room air, and temperature was 36.40C. On ear examination, there was a central perforation of the right tympanic membrane and an odorless white discharge in the right ear canal.

Family Assessments

The patient's family was mixed (extended family) because the patient lives with his father, mother, and grandparents. Based on Duvall's Eight Stage Family Life Cycle, the family stage was stage II because the patient was the first child of the husband and wife, and his age was one year and four months. The APGAR score was 10, which indicates that the family function was going well (highly functional family). In Family SCREEM, there were some problems at social and economic points. At social problems, he was always at home alone and rarely played with others because there were no same-age neighbors, and his house was on the primary roadside. Even though the family was middle class, his mother worked from morning to evening. Therefore she cannot fully care for her children. She placed her child in the sister's house whenever she worked. The family coping score was five because his family fully participates in the patient's health, and he was independent in deliberations. His family accompanies him during immunizations and actively takes him to a general practitioner or ENT specialist.

Diagnosis

Axis 1 - Personal Aspect:

Reason for Arrival: The patient and his mother come to the family doctor complaining of yellow discharge from his ear

Perception: She has the perception that complaints arise because he often has colds

Expectation: His mother hopes that complaints can improve and not interfere with hearing function

Concern: His mother is worried that the complaint will get worse if it is not treated immediately, and it can interfere with hearing function

Efforts: The mother immediately brings him to the Pratama clinic for treatment. However, she often forgets to take medicine because she is working.

Axis 2 - Biomedical Aspects:

Working diagnosis: Acute suppurative otitis media with perforation stadium

Axis 3 - Internal Risk Aspect:

Patients only get breastmilk until two months, and then he drinks formula milk.

Axis 4 - External Risk Aspect:

Economy: She cannot fully care for the child because she works from morning to evening. The child was placed in the sister's place and often forgot to take their medication. Social Environment: He plays with his peers daily so that he may contract colds from his peers.

Axis 5 - Functional Degree:

The patient is included in the functional degree scale one because the patient can still carry out daily activities.

Comprehensive Intervention

Patient-Centered Intervention

Axis 1 – Personal Aspect

Perception: Explain to the mother that her perception of his complaints is correct, but further explanation is needed regarding ASOM's causes and risk factors. One of the risk factors for ASOM is recurrent respiratory tract infection (Dhingra et al., 2018).

Expectations: Explain to the mother that he has received proper treatment. The hearing function will be fine if he cooperates with health workers in terms of adherence to treatment and avoiding causes. The secretions will no longer be present, and the tympanic membrane will gradually return to normal within 7-10 days (Soepardi et al., 2017).

Concern: explaining to the mother that ASOM is a disease that can be cured with proper treatment and by avoiding risk factors so that ASOM does not recur (Soepardi et al., 2017).

Efforts: Appraising the mother for bringing him for check-ups and periodic control at the clinic. However, because the mother often forgets to give him medication because of work, parents need to be reminded that taking medication such as antibiotics must be timely and used up; if it is not appropriate, it can lead to less effective treatment and can cause resistance (Ministry of Health RI, 2011).

Axis 2 – Biomedical Aspects of ASOM

Pharmacology treatment: we give cefadroxil, dexamethasone, demacolin (Paracetamol 500 mg, Pseudoephedrine HCl 7.5 mg, Chlorpheniramine maleate 2 mg), and vitamins based on his body weight.

Non-Pharmacology :

- Implement clean and healthy living behaviors, such as washing hands and cleaning children's toys regularly, to reduce the risk of upper respiratory infections,
- Protecting children and families from cigarette smoke and air pollution/environmental fumes,
- Avoid trigger factors for allergic rhinitis so that the recurrence of AOM can be prevented,
- Avoid giving milk from a bottle or pacifier to children below three years old when the child is lying down to minimize choking and entering the

Eustachian tube. When given milk, the child's head should be higher,

- Do not pick a child's ear roughly
- Keep children away from small objects that can enter their ears, nose, or be swallowed,
- It is best to keep your ears dry, do not get them exposed to water when bathing (Danishyar et al., 2022)

Axis 3 – Internal Risk Aspect

Educate and invite the parents to recognize the disease, know the causes, and know the risk factors so that patients can avoid and prevent the emergence of the disease. ASOM often occurs in infants and children. Moreover, it is caused by a viral infection of the upper respiratory tract, which then causes pyogenic bacteria to invade the middle ear. Educating the parents about the importance of exclusive breastfeeding for at least six months is necessary to increase the patient's immunity. However, he can get healthy food to increase immunity so that he is not susceptible to infection (Danishyar et al., 2022).

Family-Focused Intervention :

- Encouraging the patient's family to know more about the condition of each family member and play a role in the patient's treatment and the patient's growth and development,
- Encouraging the mothers to pay more attention to their children's health and have more time for their children,
- Remind parents that taking medication, such as antibiotics, must be done on time and used up; if it is not appropriate, it can lead to less effective treatment and can lead to resistance,
- Communication between the patient's family and relatives is essential so that the growth and development of the child can be carried out and monitored by both families. Like not forgetting to bring the child to the posyandu regularly,
- Explain to the patient's family regarding complaints and possible causes of ASOM that occur in patients,
- Educating the patient's family to always apply clean and healthy living behaviors in daily life.

Community Oriented Intervention :

- Giving communication about respiratory infection prevention, which can be carried out in the home environment to prevent re-infection.
- Giving communication about PHBS in the home environment.

Home Visit

We do home visits to determine the progress of the disease and the regularity of taking medication. We did the first visit on November 2, 2022 (1 week of therapy), there was no otorrhea, but the tympanic membrane was still perforated. The tympanic membrane

perforation closed at the next visit on November 16, 2022 (2 weeks after therapy).

Discussion

There are two pathophysiologies of ASOM: tubal dysfunction and spread from the outer ear. Tubal dysfunction is the most common. Infection occurs through the lumen of the tube. The eustachian tube in infants and children is shorter, more comprehensive, and horizontal, making infection easier. Respiratory tract infections obstruct the eustachian tube and nasopharyngeal mucosa, thus disrupting the middle ear drainage system. Not only that, these infections cause an inflammatory reaction and pus collection in the middle ear. It causes the pressure in the middle ear to increase and produces clinical symptoms in ASOM (6). Conditions that further increase the incidence are breastfeeding in a horizontal position. Meanwhile, spread through the outer ear occurs when the tympanic membrane perforates due to trauma which causes the pathway to open from outside to the middle ear.

The risk factors for ASOM are the tube structure based on age, recurrent respiratory infections, and allergies. The eustachian tube develops to its adult size by age seven and is about 36 mm long, while it is about 18 mm in infants. In adults, the eustachian tube forms an angle of 45° to the horizontal plane. In contrast, in infants, it varies from horizontal to an angle of about 10° to the horizontal plane and does not form an angle at the isthmus but narrows (7). Wald's study said that children with upper respiratory tract infections within 10-15 days with apparent symptoms could potentially develop otitis media. In addition, respiratory tract infections that occur more than three times a year can also cause an increased potential for otitis media due to damage to mucociliary cells, goblet cells, and mucous glands. Damage to the middle ear's defense mechanism causes the middle ear's drainage system to be disrupted. It causes an increase in air pressure due to the continuous production of secretions, which then causes infection, and acute suppurative otitis media occurs. Other risk factors include exposure to cigarette smoke and environmental fumes, breastfeeding and use of pacifiers with the head in a horizontal position, gastroesophageal reflux, a history of parents with OM in childhood, nasopharyngeal tumors, and cleft lip (3,4).

The diagnosis of otitis media is primarily based on clinical findings combined with supporting signs and symptoms. No laboratory or imaging tests are needed. According to guidelines established by the American Academy of Pediatrics, evidence of moderate to severe tympanic membrane bulging or new-onset otorrhea that is not attributable to otitis externa or mild tympanic membrane (TM) bulge with the onset of ear pain or erythema should guide the diagnosis of acute otitis media. Otoscopy should be the first and most convenient way to

examine the ear and will yield a diagnosis to the experienced eye. In AOM, the TM may be erythematous or expected, and there may be fluid in the middle ear space. In suppurative OM, a clear purulent discharge and a prominent TM will be seen. The external ear canal (EAC) may be mildly edematous, although significant edema should alert the clinician to suspect otitis externa (outer ear infection, AOE), which can be treated differently. In the presence of EAC edema, it is essential to visualize the TM to ensure it is intact. If intact TM is present and painful erythematous EAC, topical drops should be added to treat AOE. It can occur together with AOM, or independently of it, so visualization of the middle ear is paramount (4).

Treatment of AOM depends on the stage of the disease. This case is included in the perforation stage. In the perforation stage, many secretions are often seen coming out, and sometimes the discharge is pulsating (pulsation). The treatment is 3% H2O2 ear wash for 3-5 days and adequate antibiotics. Antibiotics can be given amoxicillin and clavulanic acid or cephalosporin groups II or III (2). Usually, the discharge will disappear, and the perforation can close again within 7-10 days. In this case, the tympanic membrane was closed on the third day of therapy. In the resolution stage, the tympanic membrane gradually returns to normal, secretions are no longer present, and the tympanic membrane perforation closes. Without a resolution, you usually see secretions flowing into the external ear canal through a perforation in the tympanic membrane. This situation can be caused by continuing edema of the middle ear mucosa. In such circumstances, antibiotics can be continued for up to 3 weeks. If there are still lots of secretions three weeks after treatment, mastoiditis is likely to have occurred (1). If OMSA continues with discharge from the middle ear for more than three weeks, this condition is called subacute suppurative otitis media. If the perforation persists and secretions persist for more than one and a half months or two months, this condition is called chronic suppurative otitis media (CSOM) (1).

Upper Respiratory Tract Infection (URI) relationship with Breastfeeding

URI is a significant cause of morbidity and mortality from infectious diseases worldwide. URI mortality rate reaches 4.2 million annually worldwide. URI is a disease that often occurs in children. Incidence by age group under five is estimated to be 0.29 events per child/year in developing countries and 0.05 events per child/year in developed countries (8). The development of diseases in infants in the world in 2016, such as URI at 25%, diarrhea at 7%, asthma at 5%, bronchiolitis at 5%, and pneumonia at 4.5%. From these data, URI is a disease that causes the highest death and morbidity in children, as many as 4.25 million each year. In Indonesia, URI is often the first cause of death in infants and toddlers. URI is one of the diseases that is often included in the ten lists of the most common diseases in infants

and toddlers in Indonesia. Riskesdas data for 2018 showed that the incidence of URI in Indonesia was 4.4%. As many as 23.6% of deaths in toddlers are caused by pneumonia (9).

In Utomo's study in 2009 concerning the effect of exclusive breastfeeding on the incidence of acute respiratory infections in children aged 6-23 months in the Konawe district, a history of non-exclusive breastfeeding was associated with the prevalence of URI in children aged 6-23 months. The prevalence of URI is 1.8 times higher in children who are not exclusively breastfed compared to children who are exclusively breastfed. Research by Tromp in 2017 found that babies exclusively breastfed for ≥ 6 months had a lower risk of developing respiratory infections. Breastfeeding for six months on early age can protect the respiratory tract infants and reduce the infection risk after the baby is four years old. Another study by Raheem in 2017 found that babies who stop breastfeeding before six months are more likely to experience ARI (8,9). A study by Nuzula and Yulia in 2017 showed that toddlers with a history of non-exclusive breastfeeding were seven times more likely to experience ARI than toddlers with a history of exclusive breastfeeding. Therefore, it is necessary to educate and provide information to parents about breastfeeding and the longer duration of breastfeeding (10). Several factors affect exclusive breastfeedings, such as work that makes it difficult for mothers to breastfeed their babies, so they give formula milk, little or no breast milk, and lack of information and knowledge about breastfeeding (8).

The risk factors for URI in developing countries are inadequate breastfeeding, low birth weight babies, malnutrition, and inappropriate age at the time of immunization. Exclusive breastfeeding for the first six months of life by giving breast milk together with complementary food after eating is recommended by the World Health Organization (WHO). Breastfeeding is essential for babies, especially early breastfeeding (colostrum) because it is rich in antibodies which affect reducing the risk of death. Breast milk is helpful for sensory and cognitive development, preventing babies from developing infectious and chronic diseases. Breastfeeding, especially exclusive breastfeeding, reduces infant mortality and the incidence of illness in children, diarrhea, and helps recovery from illness. Breastfeeding has long been well-recognized as a way to protect against infection in infants and promote the health of infants and early children. Protection against infection through breast milk, especially for respiratory infections. Breast milk that comes out on the first day after the baby is born consists of a yellow liquid called colostrum. It is perfect for babies because it contains substances that repel infectious diseases, including immune substances, namely immunoglobulins, which protect the body against digestive and respiratory tract infections. Breast milk contains various antimicrobial substances, anti-inflammatory components, and factors that promote the development of immune protection. It boosts the baby's

immature immune system and strengthens the defense mechanisms against infections and other agents during breastfeeding. Breast milk can provide both active and passive protection because breast milk not only protects against infection but also stimulates the development of the baby's immune system. With the presence of anti-infective substances in breast milk, exclusively breastfed babies will be protected from various kinds of infections caused by bacteria, viruses, fungi, or parasites, and breast milk also contains anti-inflammatory substances (8,9,10).

Relationship of Working Mothers with Child Health

The working mother has a specific effect on their children's overall growth and development. Children at the age of five years are crucial for children's cognitive, affective, social, emotional, and psychomotor development. In the early years of a child's growth, proper attention and affection from the mother are needed to strengthen the child's trust so that the child can easily share any problems with his parents in the future (5). Based on research conducted by Dwinanda et al. stated that the status of working mothers had a significant and negative effect on children's health levels. In contrast, the mother's education level and location (urban) significantly and positively affected the children's health levels. This research implies promoting education for future improvements in child health (11).

Prognosis

The prognosis is good. The tympanic membrane gradually returns to normal, the secretions are no longer there, and the tympanic membrane perforation is closed (1). Children with fewer than three episodes of AOM were three times more likely to manage their symptoms on a single antibiotic than children who developed the condition in seasons other than winter. Children with complications can be challenging to treat and tend to have a high relapse rate. Infratemporal and intracranial complications, although very rare, have significant mortality. The history of prelingual otitis media is a risk factor for mild to moderate conductive hearing loss. In the first 24 months of life, children with otitis media often have difficulty understanding high-pitched or high-frequency consonants, such as hissing (4).

Family of Tn T, 2 November 2022

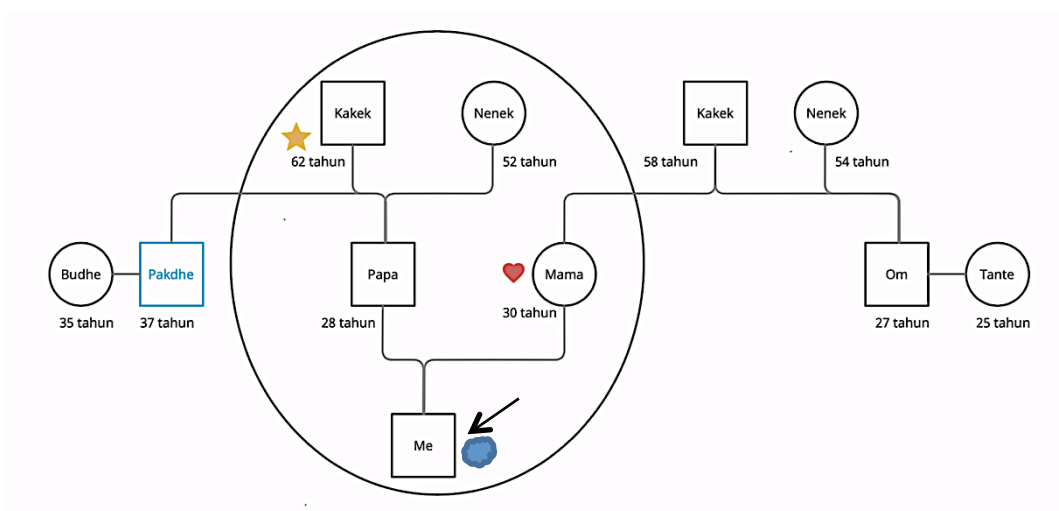
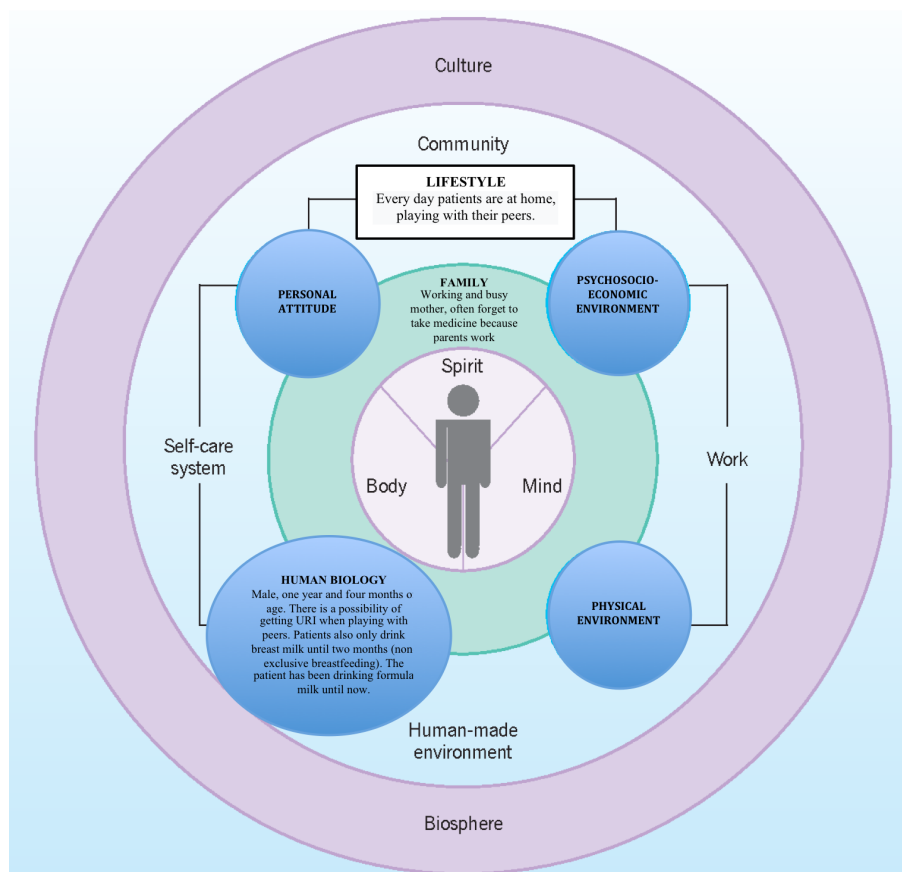


Figure 1. Family Genogram.

The T family genogram shows familial relationships and disease history. Arrows denote the locations of patients.



Adapted from Hancock 1985

Figure 2. The Mandala of Health

The Mandala of Health summarizes the factors that affect the patient's health (12)

Conclusion

It is importance of controlling risk factors to prevent recurring ASOM.

Acknowledgment

The author would like to thank to all the contributors to this article.

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