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CONTENTS (VOLUME 3, ISSUE 7, OCTOBER 2019)

S.No	TITLE	AUTHOR NAMES	PAGE NUMBERS	DOI
GUEST COMMENT(S)				
1.	It's World Smile Day– So Make Someone Happy!	Dr. Nisha Garg	217-218	https://doi.org/10.26440/IHRJ/0307.10299
EDITORIAL COMMENT				
2.	Treatment of Fractures in Black Africa: The Current State of Play	Packo Dieu-le- Veut Saint-cyr Sylvestre, Feigoudozoui Hermann Victoire	219-220	https://doi.org/10.26440/IHRJ/0307.10298
REVIEW(S)				
3.	Polypharmacy: A Prevailing but Neglected Drug Use Issue	Sukhdeep Singh	221-223	https://doi.org/10.26440/IHRJ/0307.10300
CASE REPORT(S)				
4.	Rowell Syndrome in a 4-Year-Old Male Child: A Rare Case Report	Sukhmani Brar, Jayati Batra, Balvinder Kaur Brar	224-226	https://doi.org/10.26440/IHRJ/0307.10294
5.	Diastema-The Treatment Dilemma	Diksha Sharma, Abhishek Dhindsa, Sanjay Chachra, Reena Rani, Kumar Shrikant, Manu Sharma	227-230	https://doi.org/10.26440/IHRJ/0307.10293
ORIGINAL RESEARCH(S)				
6.	Poor Prognosis Factors of Severe Malaria in Antananarivo, Madagascar (Les Facteurs De Mauvais Pronostiques Du Paludisme Grave a Antananarivo, Madagascar) (Article in English and French)	Jasper Grant Raelison, Hanitra Mbolatiana Rivoarimanana, Tanjonirina Razafindrainibe, Nadia Marie Philibertine Rahanitriniaina, Falihery Albertin Rakotomavo, Nasolotsiry Enintsoa Raveloson	231-234	https://doi.org/10.26440/IHRJ/0307.10297

INTERNATIONAL HEALTHCARE RESEARCH JOURNAL

S.No	TITLE	AUTHOR NAMES	PAGE NUMBERS	DOI
7.	Formulation of Satisfactory Meal for Sudanese Children (3-5 years) in Wad Medani Greater Locality, Gezira State, Sudan	Sitana E. Abdelrahman, Ali O. Ali, Haydar E. Babikir , Ghada T. Abdoun, Awad Elgeed T. Elkabashi	235-239	https://doi.org/10.26440/IHRJ/0307.10288
8.	Dental Prosthetic Status and Treatment Needs of Adult Population in Makkah Region of Saudi Arabia: A Survey Report	Karunakar Shetty, Othman Wali, Abrar Bakri Koosa, Anan Abdullah Alhazmi, Nouran Omar Jamal, Sara Faiz Jambi, Kamrunissa Hussain Sheikh	240-247	https://doi.org/10.26440/IHRJ/0307.10296



It's World Smile Day– So Make Someone Happy!

Dr. Nisha Garg 

“A smile is the prettiest thing you can wear”

Smiling is a facial expression that occurs when we're amused and delighted, but the power of a smile is way stronger than you think. It not only benefits your health and well-being, but it also positively impacts those around you. One of the most powerful things the world shares is the universal smile. A smile can cut through all barriers. It knows no age, gender, color or culture. No matter where you are in the world, what language you speak, or social status, a smile will always be understood. Sometimes all it takes to make the day better is a smile, whether it's one someone gives to you, or one you share with another. Whether it's just a simple compliment, a cheery hello or a gift of something small to help brighten their day, World Smile Day encourages you to take action to bring a few more smiles into the world.

The smiley face symbol is the most recognizable symbol of good will and good cheer on the planet. It was created in 1963 in Massachusetts by a commercial artist Harvey Ball. Over time Harvey got worried that his symbol was becoming over-commercialised and its original meaning and intent had got lost. Ball wanted to devote one day to smiles. So he came up with the idea of World Smile Day – one day each year to be devoted to smiles and acts of kindness throughout the world. Ball declared that the first Friday in October each year would be World Smile Day. It has continued every year in Smiley's hometown of Worcester, MA and around the world. World Smile Day started in 1999. Ball passed away in 2001 and World Smile Day lives on to honour his legacy and to remind us that in a world awash with so much negativity – kindness and happiness can still prevail.

It all starts with keeping your eyes and heart open to the people around you, just by being caring and compassionate and helping those around them have the best day they can have. Little acts of kindness can

bring a shining smile to someone who has otherwise had a terrible day and it can change everything that follows. World Smile Day is your opportunity to help brighten the world and make the world a better place through the simple power of the smile.

Everyone can make a difference on World Smile Day, and we dentist being the ambassadors of smiles we have lot to do in our hands. As going by popular saying:

“A smile is a curve that sets everything straight”
Phyllis Diller

A smile makes you beautiful and magnetic and World Smile Day is as good an opportunity as ever to think about how you should be looking after your smile and that of your children too. Babies start to smile at around 5-6 weeks old. Their first teeth usually start to appear around 4-6 months old and it's never too early to start looking them. Dental decay is almost entirely preventable and first teeth should be looked after as soon as they appear in a baby's mouth. Children are hard to persuade for a dentist visit but our kind and gentle approach to dental care for kids ensures that their fears are minimized and oral care is optimized and they might even have some fun. Combining a calm environment with expert, child-friendly staff, we help parents take care of their family's teeth from as early as possible setting a firm foundation for lifelong smiles. The better you take care of your teeth, the longer they'll last. So, with the right cleaning regime and dental support, there's no reason you can't keep your teeth for life and have an everlasting smile.

“Beauty is power; smile is its sword” – so keep your armour shining.



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Treatment of Fractures in Black Africa: The Current State of Play

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Africa is a continent where the cases of trauma are most frequent. These trauma are mostly due to road accidents.¹ Underdevelopment observed in Africa, indirectly favors poor quality of health department with an under-equipped health structure. Consequently, the condition of management of patient is insufficient in the orthopedic-traumatology departments. That's why, the results of the treatment are sometimes mediocre. Even though we know that the treatment of fractures is either orthopedic or surgical, in both cases, the good quality of the technical platform and the department are necessary for an excellent result. Now a days, several progress has being made concerning the management of fractures.² However, these advances are not yet fully integrated into the Africa's health's departments. The Maghreb countries are already experiencing a clear improvement in their technical platforms.

Global epidemiological data for fractures are not available. However, only some countries have this data. The finding is that the incidence of fractures is higher in Africa. The purpose of this comment is to recall the difficulties of the practice of orthopedic and traumatological surgery in sub-Saharan Africa.

CIRCUMSTANCE OF FRACTURES

In Africa, the circumstances of trauma are dominated by road accidents.³ This is due to the poor condition of the roads and the non respect of the rules of the road by the drivers and the pedestrians. The other circumstance of trauma in Africa is represented by weapon aggression. Armed attacks are recent and rising in recent conflicts.

WORKING CONDITIONS

The working conditions of the trauma orthopedic surgeon in Africa remain poor. The operating room is under-equipped. Hygiene is not always mandatory in all departments. Some operating rooms suffer from a lack of permanent electricity.

THE TECHNICAL PLATFORM

The majority of operating rooms do not have materials of work. Recent innovative implants in trauma surgery are not available in all health facilities in Africa. In the Central African Republic, for example, Küntcher's nail is still used today for intramedullary nailing.⁴ The mechanical complications of osteosynthesis are therefore frequent. Laparoscopy exists only in a few countries in Sub-Saharan Africa. Surgery boxes often have old instruments. The renewal and maintenance of medical devices are not regularly carried out due to lack of financial resources.

HUMAN RESSOURCES

The number of trauma orthopedic surgeons in sub-Saharan Africa is significantly insufficient. The typical example is that of the Central African Republic which has only one trauma orthopedic surgeon for a population of 5 million. This is often the result of lack of funding for training. The ratio projected by WHO is not always respected.

TREATMENT RESULTS

Paradoxically, with a limited technical platform, the results of treatment of fractures in Africa are often good. The medical practitioners often find little tips to produce good results. However, fracture management in sub-Saharan Africa faces a few limitations. The results of the treatment are sometimes influenced by the low purchasing power on the part of the patients. Also, the neglect of charging instructions by some patients sometimes makes the result of some treatments bad, but in a small proportion.

PROSPECT

Much effort remains to be deployed in the field of orthopedic and traumatological surgery in sub-Saharan Africa. The training of specialists should be encouraged, strengthened and financed so that the



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departments need to be created. The renewal of instrument boxes is to be applied on a regular basis and to adapt to recent progress. Finally, the image intensifiers, the new implants and their ancillaries as well as the laparoscopic devices must be placed in all departments to improve the quality of the results of the montages.

CONCLUSION

This work suggests a less positive view of the practice of orthopedic and traumatic surgery in Black Africa. The current context does not facilitate the achievement of good results. It is therefore necessary to improve some aspects in order to optimize a satisfactory result for the good of the patients.

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Polypharmacy: A Prevailing but Neglected Drug Use Issue

SUKHDEEP SINGH

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With the advancement in medical science, pharmaceutical industry has come up with solutions to countless health related issues. One can easily find treatment for all the ailments, be it prophylactic or curative. Also, with advancement, growth has been seen in the diversity and prevalence of medical problems. People from all age groups are suffering from varying conditions and are taking multiple medications for the same. This phenomenon called polypharmacy has been associated with multimorbidity and is counted as an important risk factor for poor outcomes.

KEYWORDS: Polypharmacy, Drug Interactions, Multimorbidity

INTRODUCTION

Polypharmacy is the concurrent use of multiple medications, often defined as the use of five or more medications on routinely basis¹ which includes use of over the counter drugs, prescribed, traditional and complementary medicines by a patient.² The term polypharmacy was first mentioned in the medical literature more than 150 years ago³ but still a majority of the population, including healthcare professionals have no idea about it. In most instances, polypharmacy is a logical response for management of complex and co-existing health problems in elderly.⁴ However, most of the old people are using lot many medications in an improper way which is of growing concern. Combination of multiple drugs can make their harmful effects outweigh the benefits when used in a complex regimen commonly seen in patients admitted to nursing homes, among elderly people and in the context of EOLC, end of life care.⁵⁻⁷

Medicines are often used in inappropriate ways that undermine their value. They are being prescribed for unapproved indications, not prescribed when they should be and patients often take them incorrectly, show treatment non-compliance or combine these drugs with other herbal products or supplements and this can cause potential harm.

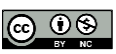
Polypharmacy is not only a burden for patients, it can be very dangerous leading to medically significant issues. It is vitally important that patients are authorized to make informed choices regarding the medications they are taking, and healthcare professionals play a prime role in educating the

patients. The factors like boom in pharmaceutical research and development to bring into the market the treatments for common chronic diseases, the willingness of patients to consume them, policies of governments and society to pay for them has given rise to the prevalence of polypharmacy.

Problems associated with polypharmacy are more prevalent in the elderly because of countless contributing factors like deterioration of general health with age, limited daily activities, reduced mobility, increased multimorbidity that is associated with multiple symptoms, impairments and disabilities, poor compliance due to complex and multiple drug therapies and these issues can interfere with the treatment process, lead to exacerbation of underlying disease and in turn can increase the need for more medication.^{8,9}

The patient groups that are most vulnerable to the risks of polypharmacy are susceptible to events such as drug interactions, higher risk of falls, fractures, chronic obstructive pulmonary disease, urinary retention, bleeding, renal injury and failure, physical and cognitive impairment, disability, progression of underlying diseases, non-adherence, poor nutritional status, frailty, sarcopenia, hampered quality of life more hospital admissions and even death.

If the medicines are prescribed for the purpose of achieving specific therapeutic benefits with an informed consent and agreement of the motivated patient to take these as intended, and have been

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regulated to curtail the risk of drug related side effects and reactions and therapeutic objectives are being met or there is a probability of the same being achieved in the time ahead, the polypharmacy can be considered as appropriate.

Use of one or more medicines that are no longer required, either because there is no confirmed diagnosis, the indication has resolved, the prescribed dose is unnecessarily high, the particular drug is contraindicated in the concerned population, the indication is not approved for that drug, there is no response or partial response to the drug, or the combination of prescribed drugs can result in interaction, cause adverse reaction, or the patient is not willing or able to take one or more medicines as intended due to any reason results in inappropriate polypharmacy.

Polypharmacy can result from several risk factors, most of them are patient centered like co-existing medical conditions under the care of several specialists, medications for symptomatic relief, self-medication, having chronic mental health conditions, prescription of medication to treat the adverse effects of another drug and residing in a long-term care facility like nursing homes. The factors at healthcare level includes incomplete medical records, inappropriate or wrong diagnosis, drug prescription and dosing errors, prescription of unnecessary medications, easy availability of diverse over the counter drugs, lack of patient motivation and provision of inadequate information to patients.

Many tools have been formulated to identify potentially inappropriate medication use although no single one has been of much help in decreasing the risk of polypharmacy. These include the Beers, the Medication Appropriateness Index, screening tool of older people's prescriptions and screening tool to alert to right treatment criteria. Regular and thorough monitoring of the patients' active medication is a must. It is also advisable to deprescribe any unnecessary medications. This would eventually decrease the pill burden, minimize the risks of drug interaction and adverse drug reactions, and also reduce the financial burden. The physicians should use point of care documentation that would help in the deprescription process and also to make the patients understand the need to decrease

medication overload in order to diminish the risks of polypharmacy.¹⁰

A major potential cause of polypharmacy is low literacy rate in general or poor health literacy at individual or population level. Miscommunication or misunderstanding physician prescriptions or orders as a result of disabilities, cognitive dysfunction, mental impairment and mistaking drugs because of similarity in shape, size, name or color, are additional contributing factors which may arise more often in elderly people.^{8,9,11,12}

Polypharmacy is an unfortunate sequela of the development and advancement in the field of medical science and research. This unpleasant consequence has led to high cost of medical treatment and poor health outcomes. Life expectancy has increased with significant rise in old population. Every day, new medicines are being discovered and new drugs are being formulated in pharmaceutical machinery to treat infinite medical conditions. The bitterness lies in the fact that these drugs behave like a double-edged sword. They are meant to upgrade, refine and boost patient health but they also have the capability and potential to result in adverse events, impairment and conditions that can be life-threatening or even fatal. Healthcare professionals need to be cautious and watchful in delivering treatment and care to their patients who are subjected to multiple medications and, when required, they should modify, alter or optimize the current regimen. They should also provide appropriate education regarding the drug use, dosage, adverse events and drug interaction to the patients and also perform a detailed and complete medication review with regular follow ups for subjects who are prescribed multiple medications.

CONCLUSION

There has been a tremendous increase in the prevalence of polypharmacy across the globe with most of the older population being exposed to polypharmacy which in turn is associated with a broad range of detrimental consequences. There is an urgent need to formulate, elaborate and refine the methods to assess the hazards of polypharmacy. There is also a need to review the international trends in the prevalence of polypharmacy, summarize and analyze their results and update the healthcare professionals regarding the clinical aftermaths of

polypharmacy.

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Rowell Syndrome in a 4-Year-Old Male Child: A Rare Case Report

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Rowell syndrome is an unusual disease entity characterized by the occurrence of erythema multiforme (EM) in association with lupus erythematosus (LE). The syndrome occurs mostly in middle aged women. We are reporting this case in a 4 year old child.

KEYWORDS: Rowell syndrome, SLE, Erythema Multiforme, Child

INTRODUCTION

Rowell syndrome is a very uncommon disease entity. It was described back in the year 1963 by Rowell and co-workers.¹ They detailed it as a syndrome characterized by lupus erythematosus with erythema multiforme-like lesions, along with a positive test for rheumatoid factor, speckled antinuclear antibodies, and a serum antibody directed to an extract of human tissues. Later on, major and minor diagnostic criteria were proposed for its diagnosis. Till date, only around 90 cases have been reported. Most of the cases have been described in middle aged women. We are reporting this case in a 4-year-old male child because it is a rare entity as such and occurrence in younger population is quite unusual.

CASE REPORT

A 4-year-old male child presented in our OPD with complaints of on & off fever; erythematous, tender swelling of fingers & toes on exposure to cold; pruritic, erythematous plaques all over the body; multiple oral ulcers; joint pain & myalgia since a duration of 2 years.

The history of Hypertension, Diabetes Mellitus, Tuberculosis, Bronchial Asthma, or seizures in the child were all negative. There was no history of similar complaint in any other family member. Patient was on irregular treatment with topical (clobetasol) and oral steroids (prednisolone 10 mg) as well as emollients. On examination, the sites involved were face, neck, ears, trunk, arms, legs, palms, soles and oral mucosa. (Figures 1 a-c) The involvement of extensor sites was more than flexors and photoexposed sites had more lesions than photoprotected sites. The sites spared were axillae, groins, ocular/ nasal/ genital mucosae. There were multiple erythematous, ill-defined, discrete to confluent papules and plaques on body

with superficial erosions and crusting at some sites.

Hemorrhagic crusts were present over lips. There were superficial ulcers with yellowish slough on the oral mucosa. Palms & soles showed presence of targetoid lesions. Other systemic examinations conducted were found to be within normal limits. Due to the concurrent presence of lupus erythematosus along with erythema multiforme like lesions, we considered the possibility of Rowell syndrome and then subjected the patient to baseline investigations. Complete hemogram was done which showed anemia with a Hb value of 8.7 g/dl, normal TLC at 8800/Cumm and lymphopenia. Urine analysis and serum chemistry were also found to be normal. Immunofluorescent assay (IFA) showed a positive ANA with a speckled pattern. Anti-dsDNA done by IFA was also positive. Anti Ro & anti La Abs performed by enzyme immunoassay (EIA) were raised. Rheumatoid factor was found to be negative. CRP was raised (7.2mg/L). Histologic examination of a plaque from the upper arm revealed mild hyperkeratosis, slight epidermal atrophy and presence of vacuolar degeneration in the basal layer (Figure 2). Dermis showed perivascular and periadnexal infiltrate composed of mainly lymphocytes and melanin incontinence. These findings were consistent with Lupus Erythematosus.

On the basis of clinical, Histopathological & immunological findings, we diagnosed the patient as a case of Rowell's syndrome (SLE+EM like lesions). The child was started on oral prednisolone with a dose of 2mg/kg/day and hydroxychloroquine to which he responded well initially but later his condition deteriorated and he died because of septicemia.



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(a)



(b)



(c)

Figure 1 a-c. Examination of the Patient

DISCUSSION

Rowell et al. described a syndrome characterized by LE and EM-like lesions, RF, speckled ANA, and precipitating antibody to saline extract of human tissue (anti-SjT) in 1963.¹ In 2000, Zeitouni et al. advocated 3 major and minor criteria each to diagnose this condition:²

Major criteria:

- 1) LE(systemic, discoid or subacute)
- 2) EM like lesions
- 3) ANA(speckled pattern)

Minor criteria:

- 1) Chillblains
- 2) Anti Ro &/or Anti La antibodies
- 3) +ve Rheumatoid factor

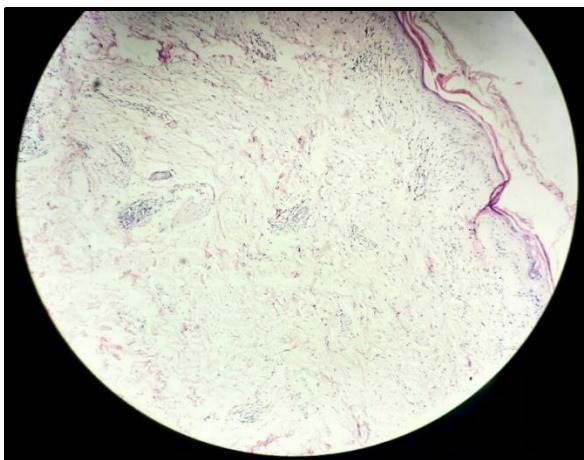


Figure 2. Histologic examination of a plaque from the upper arm

3 major and 1 minor criterion are required to establish the diagnosis. Our patient fulfilled all the major criteria along with chillblains & Anti Ro/La positivity. Occurring in about 88% of the cases, speckled ANA pattern is the most consistent character of Rowell Syndrome, whereas Rheumatoid Factor is the least preserved feature, which is seen only in around 41% of the affected subjects.^{3,4} In 2005, Aygodan K et al. proposed Rowell Syndrome to be a sub-entity of subacute lupus erythematosus with erythema multiforme.⁵ Some other researchers have variously suggested that Rowell Syndrome is a different variant of cutaneous lupus erythematosus, a subtype of chronic lupus erythematosus or an independent subtype of lupus erythematosus. Moreover in 2012, Torchia concluded that Rowell Syndrome might be incorporated as an autonomous variety of cutaneous LE confined in the spectrum of LE-specific skin conditions.⁶ Discovery of new cases like the present one and their addition to the research literature reinforces the belief that Rowell's syndrome is a well-defined clinical entity with definite diagnostic characteristics, although it is not so frequent. In most of the cases, both Rowell Syndrome and SLE respond to a similar therapeutic regimen and strategies. Steroids like prednisolone, antimalarial drugs, dapsone, immunosuppressants like azathioprine and cyclosporine have been used with good efficacy.⁷⁻⁸

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Diastema-The Treatment Dilemma

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Spacing between adjacent teeth is known as Diastema, many of the patients seek closure of diastema for aesthetic reasons. Diastema less than 2 mm close spontaneously, if they do not do so then they should not be straightaway corrected rather a thorough clinical and radiographic examination should be done to determine the underlying cause and to rule out anomalies, such as the presence of any supernumerary tooth or odontoma's which should be ruled out before going on for orthodontic therapy. The purpose of this article is to present and discuss the case of a 9-year old child with the chief complaint of spacing between the maxillary right permanent central incisor and right permanent lateral incisor. Radioopaque calcified masses were seen in the radiograph and was diagnosed with compound odontome followed by the surgical removal of the calcified masses.

KEYWORDS: Odontome, Compound Odontome, Spacing

INTRODUCTION

Odontomes are considered as the developmental anomalies resulting from the growth of completely differentiated epithelial and mesenchymal cells that give rise to ameloblast and odontoblast and are hamartomatous malformation rather than true neoplasm and are generally asymptomatic.¹ These tumors are usually formed of enamel and dentin, but they can also have variable amount of cementum and pulp tissue. The term 'odontoma' was coined by Paul Broca in 1867.² Broca defined the term as tumors formed by the overgrowth or transitory of complete dental tissue. These generally consist of unerupted or impacted teeth, retained deciduous teeth, swelling, and evidence of infection. The most common location for impacted teeth associated with odontomes is the anterior maxilla.^{3,4}

Odontomas constitute about 22% of all odontogenic tumors of the jaws. Almost, 10% of all odontogenic tumors of the jaws are compound odontomas.⁵ The incidence of compound odontome ranges between 9 and 37% and the complex odontome is between 5 and 30%.^{3,6} The compound odontoma is more common than the complex odontoma which in turn is more common than the ameloblastic odontoma. The majority of odontomas that are found in anterior segment of the jaws are compound composite in type (61%), while the majority in the posterior segment is complex composite in type (34%). It has been seen that both type of odontomas occurred more frequently on the right side of the jaw than on the left, (compound 62%, complex 68%). The compound composite

odontome most frequently occurred in incisor cuspid region of the upper jaw in comparison to the complex odontome which were commonly found in molar and premolar region of the mandible.⁶

This paper discusses a case of 9 years old boy with compound odontome. The radiograph revealed calcified masses and the case was diagnosed with the compound odontome and was surgically excised.

CASE REPORT

A 9-year-old male patient reported with a complaint of spacing in the upper front region of the jaw (Figure 1 & 2). Past family and medical histories were not relevant. The medical history was non-contributory. Intraoral examination revealed a spacing between right maxillary permanent central incisor and permanent lateral incisor.



Figure 1. Showing Spacing Between Permanent Maxillary Central Incisor and Permanent Lateral Incisor



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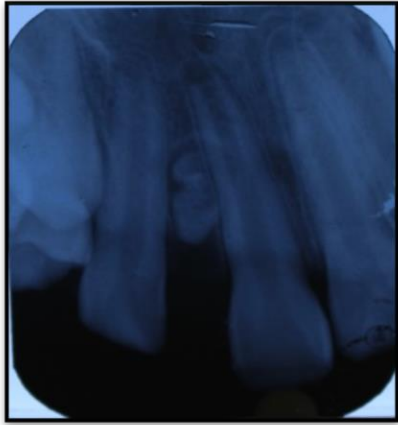


Figure 2. Intraoral Periapical Radiograph Showing Multilocular Radiolucency

INVESTIGATIONS

1. Intraoral periapical radiograph
2. Blood investigations

The patient was subjected to surgical removal of the odontome under local anesthesia. Partial thickness of mucoperiosteal flap was reflected from the labial surface of right maxillary permanent central incisor to the mesial of the right maxillary permanent canine. The layer of bone overlying the mass was removed and all the calcified masses were exposed (Figure 3). The irregular five calcified masses were removed (Figure 4). Curettage was done and the area was irrigated with Povidine iodine solution and normal saline (0.9%). The flap was repositioned and sutured. Patient was put under antibiotic and analgesics for 3 days. Patient was recalled after 1 week for suture removal. Diagnosis was made as compound odontome because there was conglomeration of small structures resembling teeth and the samples were subjected for the histopathological evaluation.



Figure 3. Surgical Exposure

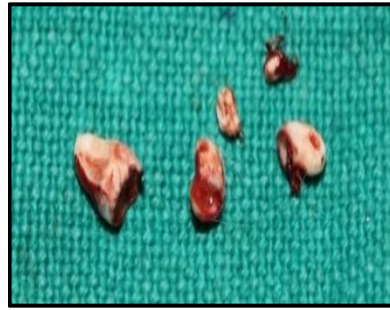


Figure 4. Removal of Calcified Masses

HISTOPATHOLOGICAL FEATURES

- Microscopic section (H&E stained) exhibiting an irregular arrangement of dentin (i.e. more tubular dentin was present)
- The mesenchymal tissue was resembling to that of pulp
- A thin layer of cementum was present at the periphery of the mass.

DISCUSSION

Diastema has a racial and familial background but in literature various reasons have been attributed to it such as supernumerary teeth, odontomas, hypertrophic labial frenum, Ellis-van Creveld syndrome, Pai Syndrome, cleft palate and median cyst, all these anomalies should be ruled out before going to any intervention therapy. So, in the present case report the chief complaint of the patient was spacing between the teeth but after carrying out the further investigation final diagnosis was made as odontomes which were surgically removed before going any orthodontic intervention. The term odontome by definition refers to a tumor of odontogenic origin. In a broad sense, it means a growth with both the epithelial and mesenchymal components exhibiting complete differentiation with the result that functional ameloblast and odontoblast form enamel and dentin. This enamel and dentin were usually laid down in an abnormal pattern because the organization of odontogenic cells failed to reach the normal state of morphodifferentiation.

Some reports have reported presence of both the types of odontomes in different locations, such as maxillary sinus, according to Bland Sutton (1988) in which 300 denticles were seen bilaterally, mandibular ramus, subcondylar region or mental foramen, mid palate and the middle ear. Hermann (1957) presented a case of

compound composite odontome which consisted of 2,000 denticles. The association of odontomes with the deciduous dentition is rare. Tratman (1949) thought that the deciduous dentition was not prone to the formation of odontomes while Saeed and Khalid noted presence of multiple odontomas in both maxilla and mandible in a female aged 7 years. In the review done by Katz, only (2%) of 396 odontomas were associated with failure of a primary tooth eruption.⁶

WHO CLASSIFICATION OF ODONTOMES

1. Complex odontoma: When the calcified dental tissues are simply arranged in an irregular mass bearing no morphologic similarity to rudimentary teeth.
2. Compound odontoma: Composed of all odontogenic tissues in an orderly pattern that results in many teeth-like structures, but without morphologic resemblance to normal teeth.
3. Ameloblastic fibro-odontome: Consists of varying amounts of calcified dental tissue and dental papilla like tissue, the later component resembling an ameloblastic fibroma. The ameloblastic fibro-odontome is considered as an immature precursor of complex odontome.⁷

In 1914, Gabell, James and Payne grouped odontoma on the basis of their developmental origin, into three types:

- a. Epithelial
- b. Composite (epithelial and mesodermal)
- c. Connective tissue

According to their position within the jaws:

- a. Intraosseous (erupted odontoma): They occur inside the bone and may erupt into the oral cavity. To date, 12 cases of the erupted variety have been described in the literature.
- b. Extraosseous or peripheral odontomas: These are odontomas occurring in the soft tissue covering the tooth bearing portions of the jaws, having a tendency to exfoliate.^{8,9}

According to Thoma and Goldman (1946)

- a. Germinated composite odontomes: Two or more, more or less well-developed teeth fused together.
- b. Compound composite odontomes: Made up of more or less rudimentary teeth.
- c. Complex composite odontomes: Calcified structure, which bears no great resemblance to the normal anatomical arrangement of dental tissues.

d. Dilated odontomes: The crown or root part of tooth shows marked enlargement.

e. Cystic Odontomes: An odontome that is normally encapsulated by fibrous connective.^{10,11}

The etiology of odontome is from extraneous odontogenic epithelial cells, these buds get divided into several particles, they develop individually to become numerous malformed closely positioned teeth or tooth-like structures pertaining to that of the pulp tissue in the central portion which is surrounded by dentin shells and are partially covered by enamel components. Complex odontomas are conglomerated masses without the normal organization of dentin, enamel, enamel matrix, cementum, and areas of pulp tissue.^{12,13} Odontoma is surrounded by the connective tissue capsule that is similar to the follicle that covers a normal tooth and is commonly present closely associated to adjacent teeth, but are separated by septum of bone. The conservative surgical removal of compound odontomas has remained the treatment of choice.^{13,14}

CONCLUSION

The diagnosis of odontomas cannot be made by visual or manual techniques. It has to be done in coordination with radiographic as well as histological examination. Radiographic examination of all pediatric patients that present clinical evidence of delayed permanent tooth eruption or temporary tooth displacement, with or without history of previous dental trauma should be performed. Early diagnosis of odontomes allows adoption of a less complex and less expensive treatment and ensures normal eruption pattern of permanent teeth.

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Poor Prognosis Factors of Severe Malaria in Antananarivo, Madagascar

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INTRODUCTION & AIM: Malaria is a major health problem in our country. Our aim is to determine the poor prognosis factors of this pathology. **MATERIALS AND METHOD:** A retrospective descriptive, analytical study was conducted in the intensive care unit of University Hospital Center of Joseph Raseta Befelatanana, during 24 months (June 2015 to May 2017). The severity was defined according to the recommendations for clinical practice (2007). We compared surviving and non-surviving patients.

RESULTS: Fifty-six (56) cases were studied. The average age was 30 ± 11 years with a sex ratio of 6. Six cases had pulmonary disease. Neurological failure was present in 29 cases. Forty-seven cases were treated with quinine and 07 cases received norepinephrine. The length of stay was 3.55 ± 2.06 days. Eighteen subjects (32%) died. In multivariate analysis, neurological failure ($p = 0.0001$), jaundice ($p = 0.0016$), renal insufficiency ($p < 0.0001$) and use of catecholamine ($p = 0.0139$) were associated with poor prognosis.

CONCLUSION: The mortality of malaria was high. Neurological failure, jaundice, renal insufficiency and use of catecholamine were poor prognostic factors.

KEYWORDS: Intensive Care Unit, Mortality, Poor Prognosis Factors, Severe Malaria

INTRODUCTION

Malaria is a major public health problem in endemic tropical regions. It affected 212 million new people and caused 429,000 deaths in 2015 in the world.¹ The mortality in developed countries was low. The neurological failure, acute respiratory distress syndrome and mechanical ventilation², age, and hyperparasitaemia³ were the factors associated with mortality. But in Africa, the mortality was around 16 to 32%.^{4,5} Age > 65 years, coma, seizures, macroscopic hemoglobinuria⁵ and cardiogenic shock were the poor prognostic factors.⁵ Our aim is to determine the factors of poor prognosis of this disease.

MATERIALS AND METHOD

This is an analytical descriptive retrospective study conducted over a period of 24 months (June 2015 to May 2017). It was performed in Intensive Care Unit of University Hospital Center of Joseph Raseta Befelatanana.

Patients' inclusion criteria was: 18 years of age, those who were diagnosed and tested positive for Plasmodium by peripheral blood smears, quantitative buffy coat test, had one or more criteria of severe malaria as per the Recommendations for clinical practice (2007).⁶

Variables included age, gender, comorbid condition, severe malaria severity criteria's, treatment, the duration of hospitalisation and mortality.

The study was reviewed and approved by the Ethical Review Board of the Medical Intensive Care Unit of the University Hospital Center of Joseph Raseta Befelatanana. Data were collected and entered in Microsoft Excel 2016. Continuous variables were represented by mean and standard deviation, and categorical variables were represented by number and frequency. The t-student test was used to analyse continuous variables and chi-square test for analysis of categorical variable. The p value was considered as significant if less than 0.05.

RESULT

A total of 56 patients were reviewed. The mean age was 30 ± 11 years. Out of the total subjects, 48 were males. Sex ratio was found to be 6. A total of 06 cases had respiratory comorbidities.

Twenty nine (52%) developed neurological failure. The circulatory failure and jaundice were observed in 17 (30%) and 16 (29%) cases respectively. Severe anaemia was present in 14 (25%) cases, 5(9%) cases had



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hyperparasitaemia.

47 (84%) patients received quinine. Twelve (21%) cases were given norepinephrine. The average length of ICU stay was 3.55 ± 2.07 days. The mortality proportion was 32% (18 cases). (Table 1)

VARIABLES	RESULTS
Age (years)	30 ± 11
Male / female gender	48/8
Comorbidities conditions	
None	46 (82)
Cardiovascular and metabolic	2 (4)
Respiratory	6 (11)
Severity criteria of malaria ⁶	
Neurological failure	29 (52)
Cardio-circulatory failure	17 (30)
Respiratory failure	12 (21)
Jaundice	14 (25)
Renal insufficiency	9 (16)
Repeated convulsions	14 (25)
Haemorrhage	10 (18)
Severe anaemia	14 (25)
Hypoglycemia	4 (7)
Hyperparasitaemia	5 (9)
Quinine / artesunate	47 (84) / 9 (16)
Dialysis	0 (0)
Mechanical ventilation	0 (0)
Duration of hospitalisation	18 (32)
Mortality (days)	3.55 ± 2.07

Table 1. Clinical & Microbiological Characteristics and Treatment of Severe Malaria

In multivariate analysis, neurological failure, jaundice, renal insufficiency and use of catecholamine were factors associated with poor prognosis (Table 2).

DISCUSSION

In this study, neurological failure was by far the most common. The mortality proportion was 32%. Neurological failure, jaundice, renal insufficiency and use of catecholamine represented as mortality risk factors.

The mortality proportion was 32%: 16 to 33% in Africa^{4,5,7}, low in India^{8,9} and developed country^{2,3,10,11}. This difference could be explained by the untimely diagnosis and treatment of patients.¹² All patients were transferred from rural endemic regions to the hospital. The neurological failure was the most common sign^{3,5,7,13} and was among the factors of poor prognosis: a result confirmed by the literature.^{3,9,13}

Jaundice has been reported as a risk factor: result confirmed by literature.^{13,14} It is due to liver dysfunction¹¹ and lysis of red blood cells.

The renal insufficiency was observed as a factor of poor prognosis: a result confirmed by some authors.^{5,9,11} None of our patients underwent haemodialysis because they had no money. The haemodialysis rate varied from 10 to 35% in the literature,^{3,9-11} with acute renal failure in 48% of subjects.^{9,15} The lack of dialysis increased death rate.¹⁶ The aetiology was multifactorial including hypovolemia, disseminated intravascular coagulation, haemolysis and hyperbilirubinemia.¹⁷

The use of amines was a risk factor associated with mortality and consistent with other reported series.^{3,4,9}

This retrospective study predicted the poor factors associated with death in severe malaria. It was the first study conducted in a medical ICU of Madagascar. Despite the small sample size, it did not predict the overall assessment of the Malagasy population in intensive care.

CONCLUSION

The morbidity and mortality of malaria remains a major problem in tropical countries. No study evaluated factors associated with poor prognosis in Madagascar. Mortality remains high in our study with factors associated with poor prognosis such as jaundice, neurological failure, use of catecholamine and renal insufficiency.

VARIABLES	PATIENTS SURVIVORS	PATIENTS NON SURVIVORS	p-VALUE
	(N = 38)	(n= 18)	
Age	29 ± 11	31 ± 12	.5151
Male gender	32	16	.6055
Cardio-circulatory failure	9	8	0.0777
Neurological failure	13	16	0.0001
Jaundice	6	10	0.0016
Renal insufficiency	2	7	<0.0001
Repeated convulsions	8	6	.2486
Haemorrhage	5	5	.1922
Severe anaemia	10	5	.5921
Hypoglycemia	3	1	.4532
Quinine	31	16	.6290
Catecholamine	2	5	0.0013

Table 2. Poor Prognostic Factors of Severe Malaria

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Les Facteurs De Mauvais Pronostiques Du Paludisme Grave a Antananarivo, Madagascar

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INTRODUCTION & AIM: Le paludisme grave est un problème majeur de santé publique dans les pays tropicaux. Notre objectif est de déterminer les facteurs de mauvais pronostiques de cette pathologie.

MÉTHODE : Il s'agissait d'une étude rétrospective descriptive, analytique, réalisée au sein du service de réanimation médicale adulte du Centre Hospitalier Universitaire Joseph Raseta Befelatanana, allant de Juin 2015 au Mai 2017. La gravité est définie selon la recommandation pour la pratique clinique de 2007. Nous avons comparé les patients survivants et les patients décédés.

RÉSULTAT: il y avait 56 cas, d'âge moyen de 30 ± 11 ans, de sex ratio à 6. Six cas avaient un antécédent respiratoire. La trouble de la conscience était présente dans 29 cas. Quarante-sept cas avaient reçu de la quinine et 07 cas de la noradrénaline. La durée de séjour moyenne était de 3.55 ± 2.06 jours. Dix-huit cas (32%) étaient décédés. Les facteurs de mauvais pronostiques étaient : la défaillance neurologique ($p = 0,0001$), l'ictère ($p = 0,0016$), l'insuffisance rénale ($p < 0,0001$) et l'utilisation de catécholamine ($p = 0,0139$).

Conclusion: La mortalité du paludisme grave reste élevée. La défaillance neurologique, l'ictère, l'insuffisance rénale et l'utilisation de catécholamine augmentent le risque de mortalité dans notre étude.

Mots clés: Facteurs de mauvais pronostique, Mortalité, Paludisme grave, Réanimation médicale.

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INTRODUCTION

Le paludisme est une pathologie grave dans les pays tropicaux. Il touche 212 millions de nouveaux cas et responsable de 429 000 décès en 2015. On notait une réduction de l'incidence et de la mortalité dans le monde.¹ Les facteurs de risques de décès liées à cette pathologie diffèrent selon les auteurs,² la défaillance neurologique, l'âge, et l'hyperparasitémie.³

Le taux de mortalité était de 32% contre 16 à 33% en Afrique, un taux faible en Inde^{8,9} et dans les pays développés.^{2,3,10,11} Les facteurs de mauvais pronostiques sont: l'âge > 65 ans, le coma, la crise convulsive, l'hémoglobinurie macroscopique⁵ et le choc cardiogénique.⁵ Notre objectif est de rapporter le profil épidémioclinique de cette pathologie afin de dégager les facteurs associés au mauvais pronostic.

MÉTHODES

Il s'agit d'une étude rétrospective descriptive analytique, sur une période de 24 mois (juin 2015 au mai 2017). Elle a été réalisée en réanimation médicale du Centre Hospitalier Universitaire Joseph Raseta Befelatanana.

Les critères d'inclusions portaient sur les patients âgés plus de 18 ans, diagnostiqué comme un paludisme

confirmé microscopiquement au laboratoire. Ils ont au moins un critère de gravité du paludisme d'importation de l'adulte.⁶

Les paramètres relevés étaient: l'âge, le genre, les antécédents, le critère de gravité de paludisme grave, sa prise en charge, la durée de séjour en réanimation et le taux de mortalité.

Les données sont extraites à partir du dossier du patient après accord du chef de l'Etablissement et le chef du service de réanimation médicale du Centre Hospitalier Universitaire Joseph Raseta Befelatanana. Elles sont enregistrées avec Microsoft Excel 2016. Les paramètres sont exprimés en moyenne \pm SD pour les variables continues et en nombre pour les variables catégorielles. L'analyse statistique était faite à partir du test t-student pour les variables continues, et khi-deux test pour les variables discrètes. La valeur de p est significative s'il est inférieur à 0.05.

RÉSULTATS

Au cours de cette période, nous avons retenu 56 patients. L'âge moyen était de 30 ± 11 ans. Le sexe masculin représentait 48 cas, de sex ratio 6. Dans ses antécédents, 06 cas avaient des antécédents



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respiratoires.

Concernant les critères de gravité (tableau 1), la défaillance neurologique, la défaillance circulatoire et l'ictère étaient présents dans 29, 17 et 16 cas respectivement. A l'examen paraclinique, il y avait 14 cas d'anémie sévère et 5 cas d'hyperparasitémie.

Au cours de la prise en charge, 47 cas recevaient de la quinine injectable. Douze (21%) cas recevaient de la noradrénaline. La durée moyenne de séjour en réanimation était de 3,55 ± 2,07 jours. Le taux de mortalité du paludisme grave était de 32 % (18 cas) (tableau 1).

PARAMETRES	RESULTATS
Age (ans)	30 ± 11
Genre masculin/féminin	48/8
Antécédents	
Aucun	46 (82)
Cardio-vasculaire et métabolique	2 (4)
Respiratoire	6 (11)
Critères de gravité du paludisme grave	
Défaillance neurologique	29 (52)
Défaillance cardio-vasculaire	17 (30)
Défaillance respiratoire	12 (21)
Ictère	14 (25)
Insuffisance rénale aigue	9 (16)
Convulsion répétée	14 (25)
Hémorragie	10 (18)
Anémie sévère	14 (25)
Hypoglycémie	4 (7)
Parasitémie	5 (9)
Quinine/artésunate	47 (84) / 9 (16)
Dialyse	0 (0)
Ventilation mécanique	0 (0)
Durée de séjour en réanimation	18 (32)
Mortalité (jours)	3,55 ± 2,07

Tableau 1 : Caractéristiques Clinico-Biologiques Du Paludisme Grave

Les facteurs de risques sont représentés sur le tableau 2 en analyse multivariée. La défaillance neurologique, l'ictère, l'insuffisance rénale aigue et l'utilisation d'amine étaient les facteurs associés au mauvais pronostics.

DISCUSSION

Au cours de cette étude, la défaillance neurologique était de loin le plus fréquent. Le taux de mortalité était de 32 %. La défaillance neurologique, l'ictère, l'insuffisance rénale et l'utilisation des catécholamines représentaient comme facteurs de risques de mortalité. Le taux de mortalité était de 32 % contre 16 à 33 % en Afrique^{4,5,7}, un taux faible en Inde^{8,9} et dans les pays développés.^{2,3,10,11} Cette différence pourrait s'expliquer par le retard diagnostique et thérapeutique des patients.¹² Tous les patients étaient transférés du milieu rural endémique de la zone palustre vers l'hôpital.

La défaillance neurologique était de loin le plus fréquent^{3,5,7,13} et figurait parmi les facteurs au mauvais pronostics: un résultat confirmé par la littérature.^{3,11,13}

L'ictère a été rapportée comme facteurs de risques dans notre étude. Arslan F et al confirmaient cette hypothèse.^{13,14} Il est dû au dysfonction hépatique¹¹ et de la lyse des globules rouges. Bruneel et al. ne rapportaient pas cette hypothèse.³

L'insuffisance rénale aigue figurait comme facteurs de risques dans cette étude: un résultat confirmé par certains auteurs.^{5,9,11} Aucun de nos patients ne recevaient ce traitement du fait de l'insuffisance de moyens financiers. Le taux d'épuration extra-rénal au cours du paludisme grave était de variant de 10 à 35 %^{3,9-11} dont 48% des cas d'une insuffisance rénale aigue.^{11,15} Ils augmentaient la surmortalité des patients surtout en absence de dialyse.¹⁶ L'étiologie de l'insuffisance rénale aigue est multifactorielle dont l'hypovolémie, la coagulation intravasculaire disséminée, l'hémolyse et l'hyperbilirubinémie.¹⁷

L'utilisation d'amines étaient les facteurs de risques liés à la mortalité et qui concordent avec d'autres séries rapportées.^{3,4,11}

Cette étude rétrospective nous permet de prédire les facteurs de risques associés à la mortalité. Elle était la première étude réalisée dans un centre de réanimation médicale de Madagascar. Malgré, la faible taille de l'échantillon ne prédisait pas sur l'évaluation globale de la population malgache en réanimation. Les dosages du gaz du sang et du lactatémie n'existaient pas dans notre laboratoire.

Paramètres	Patients survivants (n=38)	Patients non survivants	Paramètres
Age	29 ± 11	31 ± 12	.5151
Sexe masculine	32	16	.6055
Défaillance			
Cardiovasculaire	9	8	0.0777
Neurologique	13	16	0.0001
Ictère	6	10	0.0016
Insuffisance rénale aiguë	2	7	<0.0001
Convulsion répétée	8	6	.2486
Hémorragie	5	5	.1922
Anémie sévère	10	5	.5921
Hypoglycémie	3	1	.4532
Quinine	31	16	.6290
Catécholamine	2	5	0.0013

Table 2. : Les Facteurs Associés Mauvais Pronostiques Du Paludisme Grave

CONCLUSION

La morbi-mortalité du paludisme reste un problème majeur dans les pays tropicaux. Peu d'étude a évalué les facteurs associés au mauvais pronostic à Madagascar.

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Formulation of Satisfactory Meal for Sudanese Children (3-5 years) in Wad Medani Greater Locality, Gezira State, Sudan

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BACKGROUND: A knowledge of chemical composition of food is the first essential in the quantitative study of human nutrition and in the dietary treatment of disease. One of the reasons for studying nutrition is to learn how to select meal that will enable to achieve and maintain good health.

OBJECTIVE: The objective of this study was to conduct approximate analysis for some types of food so as to formulate adequate meals for Sudanese children.

MATERIALS AND METHOD: A total of 300 children 3-5 years of age from Wad Medani locality, Gezira State, Sudan, were surveyed. The study was conducted during period from July 2014 to February 2015. Dietary data and eating habits of children were obtained by interviewing mothers about their children's diet using pre-tested questionnaires. Analysis of the main food was carried out according to the protocols of AACC (1980) and AOAC (1975, 1984).

RESULTS: The results showed that, all samples of food are relatively high in carbohydrate and low in protein and fat content. Bearing in mind that all these types of stuff do not give a balanced diet therefore, two adequate meals were suggested.

CONCLUSION: It is important to add more ingredients to some of our traditional foods, to improve the nutritional values.

KEYWORDS: Children, Food Samples, Approximate Analysis, Optimal Meals

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INTRODUCTION

Nutrition is described as the sum of the process by which a living organism receives materials from its environment and uses them to promote its own vital activity such material are known nutrients. Essential nutrients are nutrients which necessary for the life and can't be synthesized by the body, therefore, it must be included in the diet.¹ Good nutrition during childhood continue to be the corner stone for survival, health and appropriate development.²

A balanced diet consists of carbohydrates, fats, proteins, vitamins, mineral and water. Adequate nutrition is essential during childhood to ensure healthy growth, proper organ formation and function, a strong immune system, and neurological and cognitive development.³ Optimal nutritional status is achieved, by consuming adequate nutrients.⁴ Lack of food as well as poor health and sanitation, inappropriate care and feeding practices are major causes of poor nutritional status.⁵

The Food composition data (FCD) are sets of information on the nutritionally important components of foods and provided values for energy and nutrients including carbohydrates, protein, fat, vitamin, mineral and other important food component

such as fiber.⁶ FCD are important in many fields including practice, research nutrition policy and education and the food manufacturing industry also is used in variety of ways including national programs for assessment of diet and nutritional status.⁷

MATERIALS AND METHOD

In this study a sample of 300 preschool children was involved from Wad Medani locality, Gezira State, during the period from July 2014 to February 2015. Dietary data and eating habits of children were obtained by interviewing mothers about their children's diet using pre-tested questionnaires. Analysis of the main food was carried out according to the protocols of AACC⁸ and AOAC.⁹ All samples were prepared for analysis. The Sudanese national sauce known as Mullah Sharmout, prepared from minced beef meat, onions, tomatoes sauce, Waika powder (from dry okra). Traditional stiff porridge, (Aceda) is prepared from fermented sorghum and cooked roux prepared from fermented milk, onion, wheat flour. Aceda, mullah sharmout and cooked roux (the most often food consumed by children) were analyzed for the contents of protein, fat, fiber, ash, moisture, and carbohydrates. The sample size of 300 children was calculated according to the method described by Boehlert M.¹⁰



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RESULTS AND DISCUSSION

The result reported in table 1 show the chemical composition of Stuff porridge, aceda, cooked roub, and mullah sharmout.

The moisture content of stiff porridge (aceda) is 76.2% this value is close to value of moisture content of aceda 78.6% reported by Boutros JZ.¹¹ The softest aceda is that made by city people and has moisture content of about 80% the harder types of aceda are to be found in rural areas in western Sudan. This types of aceda probably have moisture content of about 65% - 70%.¹² The protein content value 1.3% is generally lower than 2.4% which was verified by Boutros JZ.¹¹ The fat content is 0.7% is close to the value of 0.2% reported by Boutros. J.Z (11). Aceda contain values of 1.1 % and 0.1% of ash and fiber respectively while Boutros JZ¹¹ stated that aceda contain 0.5% and 0.8% for ash and fiber content respectively. The carbohydrate content is about 20.6% which is generally higher than value of carbohydrate 17.7 % which was reported by Boutros JZ.¹¹

The proximate chemical composition of the cooked roub is shown in table 1. The moisture content of cooked roub was found to be 78.8% which was less than that stated by Mohammed F¹³ who reported 89.5% and also, less than that reported by Sulieman AE¹⁴ who stated 91.40% for fresh roub. The ash content of cooked roub was found to be 0.8%, and this value was higher compared with ash content of cooked roub 0.1% as was determined by Mohammed F.¹³ The fiber content of cooked roub was found to be (4.34%), which was greater than (0.82%) ash value specified by the Sulieman AE¹⁴ for fresh roub and greater than (0.7%) stated by Suliman SM¹⁵ for ash content of tradition zabadi prepared at home. The cooked roub was found to contain 3.7% protein, which was close to 4.2% reported by Mohammed F¹³ for cooked roub. Fat content of the cooked roub was found to be 3.7% which is relatively more than 3.1% according to Suliman SM.¹⁵ for tradition zabadi made in home.

Table 1 shows the chemical composition of mullah sharmout. The moisture content of mullah sharmout is 80.5% this value is similar to value of moisture content of mullah sharmout 80% mentioned by Mohammed F.¹³ The protein content value is 4.5% these value greater than 1.6% value of protein content of mullah sharmout that was mentioned by Mohammed F.¹³ The fat content is 4.3% is close to value of fat content of mullah sharmout 4.50% mentioned by

Mohammed F.¹³ Mullah sharmout contain 1.5% fiber and 2.1% ash these values generally close to that stated by Mohammed F¹³ for fiber and ash 1.4%, 1.52% respectively. The carbohydrate content is about 7.10% which is generally less than value of carbohydrate 10.8 % that indicated by Mohammed F.¹³

From table 2, a gram of stiff porridge (Aceda) give 0.939 calorie, one serve of aceda (220 grams) give 206.58 calories.

From table 3, a gram of cooked roub, give 0.831 calorie, one serve of cooked roub (160 grams) give 132.96 calories. A meal consist of stiff porridge (aceda) with cooked roub give a total energy of 339.54 calories.

From table 4, a total energy from stiff porridge (aceda) with mullah sharmout is calculated as: a gram of mullah sharmout give 0.86 calorie, one serve of mullah sharmout (160 grams) give 137.6 k. calories. A meal consist of stiff porridge(aceda) with mullah Sharmout give a total energy equal to 344.18 calories.

Suggested Adequate Meal (SAM): The meals vary according to the nutrients that constitute them. All various kinds of meals contain a certain sort of nourishing materials. An adequate meal must contain all types of nutrients such as carbohydrates, proteins, fats, vitamins and minerals.

Two satisfactory meals have been prepared for children. The first meal consist of:

1. 220 grams of sorghum stiff porridge (aceda) and 160 grams of sauce (mullah) sharmout.
2. 30 gram- on cup- of vegetables salad, contain tomato, cucumber, carrot and green pepper.
3. Medium sized fruit of orange, apple, guava, (12-15) pieces of grapes, (4-6) pieces of strawberries. Or one small cup of fruit juice
4. 200 ml of milk-small cup- or 150 gram of yoghurt.

Note: Dates, Nabag fruit- ziziphus Spinacristi and laloup fruit- Balanites Aegyptioca can substitute the above mention fruits also roub can substitute yoghurt.

This meal can supply the concerned children of (3-5) year of age with total energy required also provide children with 18.6 grams of protein, as a requirement for children at this age. Another option as the substitute of aceda sharmout as an adequate meal is roub aceda. This second option stemmed out from the fact the amino acid that found in beef protein is quite different

SAMPLE	PROTEIN %	FAT%	FIBER %	ASH %	MOISTURE %	CARBOHYDRATE %
Stiff porridge (Aceda)	1.3	0.7	0.1	1.1	76.2	20.6
Cooked rouib	3.7	3.7	4.3	0.8	78.8	8.7
Mullah Sharmout	4.5	4.3	1.5	2.1	80.5	7.1

Table 1. Chemical Composition of Some Sudanese Food

CONSTITUENTS	QUANTITY (GRAM)	PHYSIOLOGICAL FUEL VALUE (CALORIE/GRAM)	CALORIE/ GRAMS
Carbohydrate	0.206	4	$4 \times 0.206 = 0.824$
Protein	0.013	4	$4 \times 0.013 = 0.052$
Fat	0.007	9	$9 \times 0.007 = 0.063$
Total energy			0.939

Table 2. Physiological Fuel Values of Aceda
(220 gram stiff porridge(Aceda) gives $220 \times 0.939 = 206.58$ calories)

CONSTITUENTS	QUANTITY IN (GRAM)	PHYSIOLOGICAL FUEL VALUE (CALORIE/GRAM)	CALORIE/ GRAMS
Carbohydrates	0.087	4	$0.087 \times 4 = 0.35$
Protein	0.037	4	$0.037 \times 4 = 0.148$
Fat	0.037	9	$0.037 \times 9 = 0.333$
Total			0.831

Table 3. Physiological Fuel Values of Cooked Rouib
(160 grams cooked rouib gives $160 \times 0.831 = 132.96$ calories)

CONSTITUENTS	QUANTITY IN (GRAM)	PHYSIOLOGICAL FUEL VALUE (CALORIE/GRAM)	CALORIE/ GRAMS
Carbohydrates	0.071	4	$0.071 \times 4 = 0.284$
Fat	0.043	4	$0.043 \times 4 = 0.172$
Protein	0.045	9	$0.045 \times 9 = 0.404$
Total			0.86

Table 4. Physiological Fuel Values of Mullah Sharmout
(160 grams mullah sharmout gives $160 \times 0.86 = 137.6$ calories)

than that found in roub bearing in mind that, the protein quality of roub has high score than beef protein (1 to .97). The constituents of the second adequate ideal meal are:

1. 220 grams of sorghum stiff porridge (aceda) and 160 grams of cooked roub.
2. 30 gram- on cup- of vegetables salad, contain tomato, cucumber, carrot and green pepper.
3. Medium sized fruit of orange, apple, guava, (12-15) pieces of grapes, (4-6) pieces of strawberries. Or one small cups of fruit juice
4. Big sized whole egg or 10 grams of meat.

Note: Dates, Nabag fruit-ziziphus Spinacristi and laloup fruit- Balanites Aegyptiaca can substitute above mention fruits; also roub can substitute yoghurt.

This meal provides children with total energy required for children at this age group and 16.796 gram of protein which is a minimum amount requirement for children at this age group. The two meals can supply the concerned children with total energy required depend to different choices, also provide children with amount of protein required, derived mainly from mullah sharmout and milk or yoghurt or roub, egg and meat. Moreover such meals supplies children with vitamins and minerals required derived mainly from vegetables and fruits such as vitamin A, vitamin B, vitamin B₂, vitamin B₃, B₁₂ vitamin C, folic acid also, potassium, calcium, iron, magnesium and Phosphorous.

CONCLUSION

All samples of food are relatively high with regard to carbohydrate and low in protein and in fat. Bearing in mind that all this stuff do not give a balanced diet therefor, it is important to add more ingredients to some of our traditional foods, to improve their nutritional values.

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Dental Prosthetic Status and Treatment Needs of Adult Population in Makkah Region of Saudi Arabia: A Survey Report

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BACKGROUND: Teeth play an important role in the maintenance of a positive self-image. The loss of teeth results in significant disabilities, which can profoundly disrupt social activities. Tooth loss is very traumatic and upsetting and is regarded as a serious life event that requires significant social and psychological readjustment.

AIM: The aim of the study was to evaluate the dental prosthetic status and treatment needs among the 20–70 year old adults of Makkah region of Saudi Arabia.

MATERIALS AND METHOD: A cross-sectional study was conducted among the Adult population of Makkah region of Saudi Arabia aged 20–70 years. 226 subjects who were above 20 years and who was reporting to Dental OPD of Ibn Sina National College for Medical studies, Jeddah for prosthesis of missing teeth was target of cross-sectional study and these patients were randomly selected. A questionnaire was developed and patient's consent was taken and examination of the patient was done and data collected. The data was compiled and subjected to descriptive and inferential analysis using the SPSS software version 21. Univariate analysis was performed using Chi-square test at 5% level of significance.

RESULTS: Among the participants, 29.6% of them had crown and 27.4% of them had bridges and only 6.2% of them had porcelain veneers. 31.9% of them desired fixed partial denture and 6.2% of them wanted Implant supported prosthesis. 22.6% of them were suitable for removable partial denture, 29.6% of them were suitable for fixed partial denture and only 3.1% of them suitable for Implant supported prosthesis. 38.9% of them opted for removable partial denture, 38.1% of them opted for fixed partial denture and only 13.3% of them opted for Implant supported prosthesis.

CONCLUSION: Prosthodontists should be able to understand a patient's motive in seeking Prosthodontic care and identify these before starting the treatment. This study provides data for an oral health-care provider program for Makkah region. The study confirms the relationship between increasing age and prosthetic status and treatment needs.

KEYWORDS: Treatment Needs, Removable Partial Denture, Fixed Partial Denture, Implant Supported Prosthesis.

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INTRODUCTION

Oral health is one of the major challenges for the welfare of each individual. It contributes significantly to the quality of life. Poor oral health and tooth loss affect not only the nutritional status and phonetics, but also the overall health of individuals.¹ Tooth loss profoundly affects the psychosocial well-being of the patients.² It leads to a decrease in the height and width of the alveolar bone leading to a decrease in the size of denture-bearing area, radical alteration in the facial appearance giving rise to a “dished in” appearance, and reduced masticatory efficiency, leading to diminished nutritional intake. Hence, to prevent or ameliorate decrements in oral health-related quality of life, removable or fixed prosthetic treatment for edentulousness is often recommended.³

A healthy stomatognathic system and healthy oral cavity are attributes of a healthy human being.⁴ We live in a social world and how we look influences our interactions with others. The face and smile play a crucial role in the creation and maintenance of positive attitudes about one's self and have a tremendous

emotional significance. The face has become a symbol for the total self. A smile is a window into one's personality.⁵

De Van said, “*Meet the mind of the patient, before you meet the mouth of the patient.*” Clinical skills and fulfilment of patient's needs are inseparable so before starting the patient work it is vital to determine what patient has in mind and by knowing this we can truly fulfil our duty by providing successful prosthesis.⁶ The term ‘need’ is commonly used to describe the type of treatment that dentist's judge their patients ought to have, whilst ‘demand’ refers to the treatment requested by the patients. Studies reporting the dental prosthetic status of people give an indication of the awareness and perception of patients toward dental treatment, accessibility to dental services, priorities, and willingness to take treatment. Further, studies assessing the prosthetic treatment needs of the population indicate the burden of unmet treatment needs, and the data are highly useful for planning an oral health promotional program and improvement of prosthetic



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treatment facilities.⁶

The present study was undertaken as a part of hospital population-based oral health survey to formulate an oral health-care provider program.

The aim of the study was to evaluate the dental prosthetic status and treatment needs among the 20-70-year-old adults of Makkah region of Saudi Arabia. Objective of the study was to comparing the prosthetic status and treatment needs in relation to age.

MATERIALS AND METHOD

A cross-sectional study was conducted among the Adult population of Makkah region of Saudi Arabia aged 20-70 years. The study was conducted for 2 months. Sampling technique was convenience sampling and 226 subjects who were above 20 years and were reporting to Dental clinic OPD of Ibn Sina National College for Medical studies, Jeddah for prosthesis of missing teeth were target of cross-sectional study and these patients were randomly selected. A questionnaire consisting of 11 close ended, pre-tested questions developed to determine patients' need with their Dental prosthesis. The questionnaire served as a guide to interview the patient and collect data on perceptions of the patient regarding Prosthetic status and treatment needs. The patients consent was taken and oral examination was conducted in natural day light and findings were recorded using WHO oral health assessment form. The examiners were two dental interns who had been trained and calibrated for inter examiner variability data obtained was then recorded on the questionnaires and subsequently entered into SPSS software version-20 to be analyzed statistically. Microsoft word and excel sheet were used to generate graphs and tables and descriptive statistical analysis was then carried out.

The data was compiled and subjected to descriptive and inferential analysis using the SPSS software version 21. Univariate analysis was performed using Chi-square test at 5% level of significance.

RESULTS

The study included 100 male patients (44.2%) and 126 female patients [(55.8%),(Table 1)]. Age of the patients ranged from 20-70 year old patients, 20-30 year old patients 94 (41.6%), 30-40 years old patients, 74 (32.7%), 40-50 year old patients, 34 (15%), 50-60 year old patients, 16 (7.1%) and 60-70 year old patients 8 [(3.5%) (Table2)].

	NUMBER	PERCENTAGE
Gender		
Male	100	44.2
Female	126	55.8

Table 1. Gender Wise Distribution of Study Participants

AGE (in years)	NUMBER	PERCENTAGE
20-30	94	41.6
30-40	74	32.7
40-50	34	15.0
50-60	16	7.1
60-70	8	3.5

Table 2. Age Wise Distribution of Study Participants

Socioeconomic status of the patients as follows; 56 (24.8%) of them were poor, 106 (46.9%) of them were middle class and 64, (28.3%) of them were high class (Table 3).

SOCIOECONOMIC STATUS	NUMBER	PERCENTAGE
1 (Poor)	56	24.8
2 (Middle Class)	106	46.9
3 (High Class)	64	28.3

Table 3. Distribution of Participants Based on Socioeconomic Status

Occupation of the patients were as follows; Labor class 3 (1.3%), farmers 26, (11.5%), sweeper 46, (20.4%) small general merchants 32 (14.2%), Housewife 56 (24.8%), Business 23 (10.2%), Service 24 (10.8%), and Professional 16 (7.1%) (Table 4).

OCCUPATION	NUMBER	PERCENTAGE
1 (Labor Class)	3	1.3
2 (Farmers)	26	11.5
3 (Sweeper)	46	20.4
4 (Small Merchant)	32	14.2
5 (Housewife)	56	24.8
6 (Business)	23	10.2
7 (Service)	24	10.8
8 (Professional)	16	7.1

Table 4. Distribution of Participants Based on Occupation

Education of the participants were as follows; illiterate 26, (11.5%), Till primary 34, (15.0%), Till high school 82, (36.3%), Inter and above 27 (11.9%), Graduate 34 (15.0%) and Postgraduate 23 (10.2%) (Table 5).

EDUCATION	NUMBER	PERCENTAGE
1 (Illiterate)	26	11.5
2 (Primary)	34	15.0
3 (High School)	82	36.3
4 (Inter & above)	27	11.9
5 (Graduate)	34	15.0
6 (Post Graduate)	23	10.2

Table 5. Distribution of Participants Based on Education

Among the participants, 29 (12.8%) of them were completely edentulous, Kennedy's class 1 were 27, (11.9%), Kennedy's class 2 were 44 (19.5%), Kennedy's class 3 were 85(37.6%) and Kennedy's class 4 were 14 (18.1%) (Table 6).

EDENTULISM	NUMBER	PERCENTAGE
Edentulous	29	12.8
Kennedy's class 1	27	11.9
Kennedy's class 2	44	19.5
Kennedy's class 3	85	37.6
Kennedy's class 4	14	18.1

Table 6. Distribution of Participants Based on Edentulism

Among the participants, Prosthetic Status were as follows; 67(29.6%) of them had crown, 12(5.3%) of them had crown and bridges, 13 (5.8%) of them had crown, bridge and porcelain laminates, 7 (3.1%) of them had crown, bridge and different type of prosthesis, 62, (27.4%) of them had only bridge, 14, (6.2%) of them had porcelain and laminates, 24, (10.6%) of them had complete denture, 25, (11.1%) of them had Removable partial denture, 2, (0.9%) had different type of prosthesis (Table 7).

Need of the patient were as follows: 57, (25.2%) of them wanted prosthesis for mastication, 23, (10.2%) of them wanted prosthesis for mastication and esthetics, 15 (6.6%) of them wanted prosthesis for mastication, esthetics, phonetics and for comfort, 9(4.0%) of them wanted prosthesis for mastication, esthetics and for

comfort, 8, (3.5%) of them wanted prosthesis for mastication and for comfort, 46, (20.4%) of them wanted prosthesis for esthetics, 39, (17.3%) of them wanted prosthesis for phonetics, 8 (3.5%) of them wanted prosthesis for phonetics and comfort, 21, (9.3%) of them wanted prosthesis for comfort (Table 8).

PROSTHETIC STATUS	NUMBER	PERCENTAGE
1 (Crown)	67	29.6
1,2 (Crown & Bridge)	12	5.3
1,2,3 (Crown, Bridge and porcelain laminates)	13	5.8
1,2,5 (Crown, Bridge and different type of Prosthesis)	7	3.1
2 (Bridge)	62	27.4
3 (Porcelain & Laminates)	14	6.2
4 (Complete Denture)	24	10.6
5 (RPD)	25	11.1
6 (Different Prosthesis)	2	0.9

Table 7. Distribution of Participants Based on Prosthetic Status

NEED OF THE PATIENT	NUMBER	PERCENTAGE
1 (Mastication)	57	25.2
1,2 (Mastication & Esthetics)	23	10.2
1,2,3,4 (Mastication, Esthetics, Phonetics and for Comfort)	15	6.6
1,2,4 (Mastication, Esthetics and for Comfort)	9	4.0
1,4 (Mastication and Comfort)	8	3.5
2 (Esthetics)	46	20.4
3 (Phonetics)	39	17.3
3,4 (Phonetics & Comfort)	8	3.5
4 (Comfort)	21	9.3

Table 8. Distribution of Participants Based on Needs of the Patient

It was seen that 17 (7.5%) of them desired complete denture, 10 (4.4%) of them desired complete denture and Implant supported prosthesis, 34(15.0%) of them desired removable partial denture, 9(4.0%) of them desired removable partial denture and fixed partial denture, 14, (6.2%) of them desired removable partial denture, fixed partial denture and implant supported prosthesis, 35 (15.5%) of them removable partial denture, Implant supported prosthesis, 72, (31.9%) of them desired fixed partial denture, 21(9.3) of them desired fixed partial denture and implant supported prosthesis, 14 (6.2%) of them desired Implant supported prosthesis (Table 9).

DESIRED TREATMENT	NUMBER	PERCENTAGE
1 (Complete Denture)	17	7.5
1,4 (Complete Denture & Implant)	10	4.4
2 (RPD)	34	15.0
2,3 (RPD & FPD)	9	4.0
2,3,4 (RPD, FPD & Implant)	14	6.2
2,4 (RPD& Implant)	35	15.5
3 (FPD)	72	31.9
3,4 (FPD & Implant)	21	9.3
4 (Implant)	14	6.2

Table 9. Distribution of Participants Based on Desired Treatment (Implant= Implant Supported Prosthesis)

Treatment options explained by clinicians as follows: 16, (7.1%) is suitable for Complete denture, 8 (3.5%) is suitable for Complete denture and Implant supported prosthesis, 51(22.6%) is suitable for Removable partial denture, 9 (4.0%) is suitable for removable partial denture and fixed partial denture, 18 (8.0%) is suitable for removable partial denture, fixed partial denture and implant supported prosthesis, 39 (17.3%) is suitable for Removable partial denture and Implant supported prosthesis, 67(29.6%) is suitable for Fixed partial denture, 11 (4.9%) is suitable for Implant supported prosthesis and Fixed partial denture, 7(3.1%) is suitable for, Implant supported prosthesis (Table 10).

TREATMENT OPTIONS	NUMBER	PERCENTAGE
1 (Complete Denture)	16	7.1
1,4 (CD & Implant)	8	3.5
2 (RPD)	51	22.6
2,3 (RPD & FPD)	9	4.0
2,3,4 (RPD, FPD & Implant)	18	8.0
2,4 (RPD & Implant)	39	17.3
3 (FPD)	67	29.6
3,4 (FPD & Implant)	11	4.9
4 (Implant)	7	3.1

Table 10. Distribution of Participants Based on Treatment Options (Implant= Implant Supported Prosthesis)

Final Treatment opted by participants as follows: 22(9.7%) of them opted for complete denture, 88 (38.9%) of them opted for removable partial denture, 86(38.1%) of them opted for fixed partial denture, 30 (13.3%) of them opted for Implant supported prosthesis (Table 11).

FINAL TREATMENT	NUMBER	PERCENTAGE
1 (Complete Denture)	22	9.7
2 (RPD)	86	38.1
3 (FPD)	88	38.9
4 (Implant)	30	13.3

Table 11. Distribution of Participants Based on Final Treatment Opted by the Patient (Implant= Implant Supported Prosthesis)

Table 12 shows there were a statistically significant difference between prosthetic status and the age groups ($\chi^2 = 58.882, P < 0.01$).

	VALUE	DF	ASYMP. SIG. (2-SIDED)
PEARSON CHI-SQUARE	58.882 ^a	32	.003
LIKELIHOOD RATIO	63.569	32	.001
N OF VALID CASES	226		

Table 12. Statistically Significant Difference Between Prosthetic Status and the Age Groups ($\chi^2= 58.882, p < 0.01$).

Table 13 shows there were no statistically significant difference between desired treatment and the age groups ($\chi^2 = 43.330$, $P > 0.05$).

	VALUE	DF	ASYMP. SIG. (2-SIDED)
PEARSON CHI-SQUARE	43.330 a	32	.087
LIKELIHOOD RATIO	40.642	32	.141
N OF VALID CASES	226		

Table 13. Statistically Significant Difference Between Desired Treatment and Age Groups ($\chi^2 = 43.330$, $p > 0.05$)

Table 14 shows there was a statistically significant difference between need of the patient and Prosthetic status ($\chi^2 = 76.19$, $p < 0.001$).

	VALUE	DF	ASYMP. SIG. (2-SIDED)
PEARSON CHI-SQUARE	76.197 a	15	.000
LIKELIHOOD RATIO	85.673	15	.000
LINEAR-BY-LINEAR ASSOCIATION	15.937	1	.000
N OF VALID CASES	226		

Table 14. Statistically Significant Difference Between Need of the Patient and Prosthetic Status ($\chi^2 = 76.19$, $p < 0.001$)

DISCUSSION

Aging is a universal process and a normal biological wonder. With the advancement in the field of medical science and the improved social conditions, there is escalation in the life span of an individual. Oral health can be considered as gauge of general health and quality of life for any individual.⁷ Early loss of permanent teeth leads to stomatognathic system

disability, loss of masticatory functions, and alterations in speech and face aesthetics.⁸ Patients' perception of need frequently gives rise to a demand for health care. Patients are often unaware of the treatment options available and depend on the health care provider to suggest the appropriate care for their conditions. Planning of treatment is essential for good prognosis. It also helps to prepare the patients psychologically for the type of treatment they will receive without any unrealistic imagination of the treatment.⁹

Distribution of participants in this study was found to be 55.8% were female participants and males were 44.2%.

The majority of sample was in age group 20-30 years & 30-40 years for both male and female, unlike other study where most of the participants at the age group of 40-49 years & 50-59 years.¹⁰⁻¹²

Most of the participants were middle class category and maximum of them were housewives and studied up to high school. In this study, the income status of the patients was a significant predictor of the wearing of dentures. Previous studies showed that replacement of missing teeth was more common among those from a higher socio-economic status¹³ and income.¹⁴ Income and educational status of individuals are often correlated. In their study, Shah et al.¹¹ reported that the prevalence of wearing of dentures increased with the increase in the level of literacy. It may be that individuals with higher educational attainments have greater health concerns and thus seek prosthodontic care more often than those with lower levels of education.

It has been established from a past study that an increase in the educational level of a population affects the needs and demands of that population. The educational level and social standard of the study population was poor which led to unmet prosthetic need.¹⁵ Owing to the monthly income, the socioeconomic status was seen as the poor were 60.4%, the middle were 28% and high were 11.6%. The occupations of the people were that the labor class were 28.3%, farmers were 23.5%, sweepers were 19.2%, small general merchants were 17.4%, housewives were 15.5%, businessmen were 7.5% and servicemen were 6.1%. According to the education, illiterate people were 46.8%, those educated till primary level were 22.8%, people with education till high school were 15.6% and higher education was seen in 14.8%. The edentulous people were 184 and partially edentulous were 66.

Only 9.7% opted for complete denture as final treatment choice, where as 38.9% opted for FPD and 38.1% opted for RPD and 13.3% opted for Implant supported prosthesis.

In the present study, it was observed that the total prosthetic needs were 15.5% whereas in a study done on a representative German sample, 81% had normative prosthetic treatment needs. This vast difference in prosthetic needs might be due to the difference in criteria used in the assessment of prosthetic needs between the studies. While assessing the prosthetic needs, Walter et al have included all those individuals with grade III mobile teeth, extreme malocclusion and intraosseous and non-restorable hard tissue decay.¹⁶

People with edentulousness and without prosthetic rehabilitation suggest that they are not motivated to take treatment, cannot bear the finances,¹⁷ are not aware of the different treatment modalities,¹⁸ have time constraints to take treatment,¹⁹ or have the fear of dental treatment. Since the level of education also influences the treatment-seeking behaviour, this may have had an impact on the prosthetic rehabilitation of the people in Jizan, as nearly 30% of Jizan population studied was illiterate. Further, income may not play a major role with respect to prosthetic rehabilitation, as the Saudi government provides free dental treatment to the people.²⁰

Even today, conventional removable dentures continue to represent the first rehabilitative option offered to the edentate in many places around the world.²¹ In the present study, implants were reported in very less number of patients. Cost is not a hindrance in Jizan, but creating awareness, motivation, and imparting correct knowledge about the treatment procedure may improve the implant placement among the people.

It was seen that majority patients were poor, labor class and illiterate. These patients had maximum edentulous and partially edentulous state. Therefore they expressed willingness for conventional acrylic complete and removable partial dentures. The study by Eklund SA and Burt and Gilbert GA et al. also found the prosthetic status to be better among the subjects in the higher classes.²² An inverse relationship was observed between the socioeconomic status and prosthetic need.²³

Among the needs, mastication was the chief need in 52.4%, esthetics and mastication was needed in 27.2%,

esthetics, mastication and phonetics was needed in 11.2%, esthetics was desired by 4.8% and comfort in 4.4%. Similar findings have been given as by Annette Thomas – Weintraub, who stated that masticatory difficulty was the most frequently voiced complaint.²⁴

The clinician explained different treatment options to the patients. Implants were suggested to 62%, fixed partial dentures were told to 28% and special dentures explained to 10%. The final treatment that was opted by the patient after being told about various options by the clinician were that complete denture were opted by 56.8%, acrylic removable partial dentures were agreed to by 28%, fixed partial dentures were the choice of 12.4%, implants were agreeable with 1.6% and special dentures were finalized by 1.2%. It can be seen that though the clinician suggested better options to the patient, majority of them chose to conventional acrylic prosthesis. It could be due to the low economic state, education, awareness, age and ability to afford extra visits to the institution. However, demand for prosthetic replacement by patients was much less than their actual need. Also the clinical possibilities to prosthetic replacement for each patient according to the missing teeth were significantly different from patient desire.²⁵

It has to be realized that the decision of whether or not to undergo prosthodontic treatment belongs to the patient, who when properly educated about the dental aspects of the decision can best weigh his or her own priorities²⁶ any studies regarding dental prosthetic status and treatment needs were done on elderly individuals residing at elderly home²⁷, hospitals, institutions and elderly general population. Prosthetic needs of our study was 15.5% which was very low when compared to that of previous, in a study done on elderly home residents 82% of the subjects were in need of fixed, removable or combined prosthodontic treatment.²⁸ Reason for this great difference in prosthetic needs between the present and past studies may be due to the reason that our study population comprised of adults (20-60 years). It has been established from a past study that an increase in the educational level of a population affects the needs and demands of that population. The educational level and social standard of the study population was poor which led to unmet prosthetic needs. Past studies^{29,30} have collected information regarding prosthetic needs as subjective and normative prosthetic treatment and found out that a discrepancy always exists between the subjective and normative needs, but in our present

study we have recorded only normative prosthetic needs as only clinical examination of the subjects was done without any questionnaires or interviews.

The clinician explained different treatment options to the patients were complete denture, Removable partial denture, fixed partial denture and Implant supported prosthesis. The final treatment opted by the patient after being told about various options by the clinician was that the majority of sample was in age group for both male and female. As expected and consistent with the findings of other studies³¹, the results revealed a significant association between the number of tooth loss and age. Dental caries and periodontal diseases are the major causes of tooth loss. As a result of the cumulative effects of these two conditions, the likelihood of tooth loss will increase with age. Our patients usually do not complain until pain and heavy discomfort are present. Only when complaints are reported, the patients see the dentist. These results are in agreement with Knabe & Kram (1997) who described similar findings.³²

CONCLUSION

Based on the results of this study it is concluded that:

1. The present results may serve as a baseline for the future evaluation of attitudes towards replacement of teeth.
2. Prosthodontists should be able to understand a patient's motive in seeking Prosthodontic care and identify these before starting the treatment.
3. This study provides data for an oral health-care provider program for Makkah region. It was evident from the study that more than half of the surveyed adult population was in need of some or the other forms of prosthesis. The study confirms the relationship between increasing age and prosthetic status and treatment needs.

Clinical Relevance: Most population do not convey to Prosthodontist about their needs. Once they do so, Prosthodontist can use different treatment options successfully.

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