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F, editor. Infrastructure provision and the negotiating process. Aldershot: Ashgate; 2003.

3- Book chapter from an edited book

Author(s) surname Initial(s). Title of chapter: subtitle. In: Author(s) surname Initial(s). Title of book. Place of publication: Publisher; Year of publication. p. page numbers.

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Haefner H. Negative symptoms and the assessment of neurocognitive treatment response. In: Keefe RSE, McEvoy JP, editors. Negative symptom and cognitive deficit treatment response in schizophrenia. Washington DC: American Psychiatric Association; 2004. p. 85-110

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Example:
Meric F, Bernstam EV, Mirza NQ, Hunt KK, Ames FC, Ross M I, et al. Breast cancer on the world wide web: cross sectional survey of quality of information and popularity of websites. BMJ. 2002;324(7337):577-81.

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Author(s) surname Initial(s). Title of article. Abbreviated title of journal [online]. Year of publication;volume number(issue number):page numbers. [Accessed date]. Available from: URL.
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Ross CTF. A conceptual design of an underwater vehicle. Ocean engineering [online]. 2006;33(16):2087-2104. [Accessed 6 July 2007]. Available from: http://www.sciencedirect.com/

7- Thesis or dissertation (published)

Author's surname Initial(s). Title: subtitle. Award level of thesis, Awarding institution; Year of publication.
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Deb S. Psychopathology of adults with a mental handicap and epilepsy. MA thesis, University of Leicester; 1991

8-Website or webpage (if the author is found)

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Author(s)/Editor(s) surname Initial(s). Title. [online]. Publisher: place of publication; Year [Accessed date]. Available from: URL

Example:

SukYin A. Catechol-O-Methyltransferase (COMT) gene and breast cancer. [online]. Human Genome Epidemiology Network, National Office of Public Health Genomics, Centers for Disease Control and Prevention: Atlanta GA; 2002 Jun [Accessed 8 September 2008]. Available from: http://www.cdc.gov/genomics/hugenet/factsheets/FS_COMT.htm

9- Website or webpage if a specific author cannot be found, attribute to the organisation or corporation.

Example:

Overseas Development Institute, Humanitarian Policy Group. Welcome to HPG. [online]. ODI: London; 2007 [Accessed 9 July 2007]. Available from: http://odi.org.uk/hpg/index.html

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Welcome from the Editor-in-Chief

The Benghazi University Medical Journal (BUMJ) is a semi-annual, open-access publication that follows a rigorous double-blind, peer-review process. We publish original research, insightful reviews, intriguing case reports, and brief communications that highlight the latest advancements in diagnosis, treatment, and other health-related fields. BUMJ also welcomes correspondence about its published articles to encourage academic dialogue and the exchange of ideas.

Our mission is to be a platform for sharing innovative research, thought-provoking reviews, and impactful case studies. We strive to bridge the gap between research and clinical practice by promoting evidence-based approaches and covering a wide range of topics—such as basic medical sciences, cutting-edge diagnostics, therapeutic innovations, healthcare technologies, and interdisciplinary patient care.

At BUMJ, we are passionate about advancing healthcare and improving outcomes. We invite contributions from diverse voices in the medical community and look forward to fostering meaningful collaborations that make a difference.

Prof. Amina A. Alshekteria

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Awareness and knowledge of glaucoma among adult ophthalmic patients Attending Central Eye Clinic/Benghazi

Safa J. Elhoni*[1], Samar A. Bukhatwa [1,2]

Original Research Article

Abstract

Background:The risk of blindness caused by glaucoma is higher when individuals lack awareness and understanding of the condition. Delay in the diagnosis of glaucoma is also a significant factor contributing to blindness. The level of awareness of glaucoma in the Libyan population is not known.

Aim: to determine the level of glaucoma awareness among Libyans and provide baseline data for better allocation of public health resources.

Material and methods:The study was conducted at the Out-Patient Ophthalmology Clinic affiliated with Benghazi Teaching Eye Hospital. Data were collected through a face-to-face interview using a structured questionnaire during the first week of January 2024. The collected data was tabulated, coded, and analyzed using the SPSS program for Windows 7, version 23, and $P < 0.05$ was considered statistically significant.

Results:hundred eighty-five participants were interviewed, with a mean age of 47.8,12.34 (range from 35-80) years. Out of which 156 (84.3%) had heard about glaucoma, but only 32 (17%) were aware of glaucoma based on the study's definition of awareness, 50% were in the age group30-39 years (P= 0.04), 69% were female (P=0.02), 72% were government employees (P=0.04), 91%were not diabetics (P= 0.03)and 47% got their information from family and friends (P<0.001). Regarding knowledge of glaucoma, 34.3% of the aware participants had good knowledge, 59.5% had average knowledge, and 6.2% had poor knowledge.

Conclusion: awareness of glaucoma among attendants in the Ophthalmology Clinic Benghazi is low (17%), with half of those aware being in the age group of 30-39 years, with females being more aware than males. The primary source of information for them was family and friends (47%). To address this issue, effective educational campaigns and media strategies are needed to raise awareness levels and prevent blindness caused by glaucoma. WAwareness, Glaucoma, knowledge, blindness, Libya.

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Introduction

Glaucoma is a type of optic neuropathy, related to the progressive loss of ganglion cells and axons of the retina, which causes defects in the visual field. It is considered to be the leading cause of irreversible blindness in the world[1].Generally, most people with glaucoma are unaware of their disease, in part because there are no specific symptoms in its initial stages, which significantly delays diagnosis[2].

An estimated 64 million people globally have glaucoma[3], of whom 6.9 million (10.9%) are reported to have moderate or severe distance vision impairment or blindness due to more severe forms of the disease.[4]

Primary open-angle glaucoma (POAG) is the most frequent of the presentations, causing three-quarters of glaucoma cases.[5] It is a silent disease that can go unnoticed in its early stages until it worsens to the point when it impairs a patient's vision, visual field, and quality of life.[1]

A large body of research suggests that blindness due to glaucoma is also linked to inadequate awareness and understanding of the condition and that a delayed diagnosis of glaucoma is a significant risk factor for blindness.[1,6] Also, research revealed that one-third of individuals had reached blindness before consulting a doctor or receiving medical attention.[7]

Increasing public awareness improves adherence and slows the progression of the disease by encouraging ophthalmological examinations, targeted screening, and active engagement in follow-ups and treatments.[8] Thus, patient education and awareness initiatives are critical components of the global fight against blindness.[9]

According to a cross-sectional study conducted in Libya in 2010, the prevalence of blindness was found to be 3.25%, with glaucoma accounting for 24% of the cases.[10] The level of awareness of glaucoma in the Libyan population is not known. Therefore, this study aims to provide baseline data for better allocation of public health resources and may help in the prevention of blindness in glaucoma patients.

Material and methods:

A hospital-based cross-sectional study was conducted at the Out-Patient Ophthalmology Clinic affiliated with Benghazi Teaching Eye Hospital.

Data were collected through a face-to-face interview using a structured questionnaire involving persons aged 35 years and above visiting the hospital out patient department during 1st week of January 2024.

The questionnaire was adapted from previous studies[6,11,12,13]and consists of three parts to collect socio-demographic information and assess glaucoma awareness and knowledge, it was translated into Arabic (local language).Participants were enrolled in the study using convenient sampling after obtaining informed consent and according to the Helsinki Declaration.

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This study investigated the impact of sociodemographic and health-related factors on glaucoma knowledge and awareness. Independent variables included gender, age, educational level, occupation, history of hypertension, history of diabetes, family history of glaucoma, and history of previous eye examinations.

Aware definition:

If a participant responded positively to the question "Have you ever heard of glaucoma?" and provided at least one answer such as "Glaucoma is high eye pressure," "Glaucoma causes damage to the eye nerve," or "Eye disease causes visual field loss," they were considered aware of glaucoma. Simply being familiar with the term "glaucoma" did not indicate awareness of the condition; therefore, merely hearing the term was not considered sufficient for awareness.[11]

Knowledge:

Twelve questions modified from previous research[6, 11-13]were utilized to assess the participant's knowledge level on glaucoma. Each correct response was awarded one point.

The knowledge level was classified into three categories: poor level (1-4), average level (5-8), and good level (9-12).

The collected data was tabulated, coded, and analyzed using the SPSS program for Windows 7, version 23.A descriptive analysis was carried out, which involved calculating frequencies, percentages, means, and standard deviations. A Chi-square analysis was used to find relationships between categorical variables. $P < 0.05$ was considered statistically significant.

Results:

A total number of 185 participants were interviewed, the mean participants' age was 47.8±12.34 (range from 35-80) years. Of these, approximately 93 were female accounting for 50.3% of participants. Table 1 shows the sociodemographic data of the participants.

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Table 1: Sociodemographic data of participants (N= 185)

Parameter	Number (%)
Gender	
Male	92 (49.7)
female	93 (50.3)
Age (years)	
30-39	54 (29.2)
40-49	55 (29.7)
50-59	37 (20)
60-69	24 (13)
70 and more	15 (8.1)
Nationality	
Libyan	179(96.8%)
Non-Libyan	6 (3.2%)
Region	
Benghazi	153(82.7%)
Outside Benghazi	32 (17.3%)
Education level	
Illiterate and primary school	52 (28.1)
Intermediate and high school	60 (32.4)
Graduated and above	73 (39.5)
Occupation	
Housewife	57 (30.8)
Government employe	92 (49.7)
Self employed	16 (8.6)
Retired	20 (10.8)

Awareness of glaucoma

Out of the 185 participants interviewed, 156 (84.3%) heard about glaucoma but only 32 (17%) were aware of glaucoma according to to our definition of awareness, see Table 2

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Table 2: Awareness of glaucoma

Variable	Number (%)
Heard of Glaucoma (n=185)	
Yes	156 (84.3)
No	29 (15.7)
Explaining the meaning of Glaucoma (n=156)	
Glaucoma is high eye pressure	21 (11.4)
Glaucoma causes damage to the eye nerve	4 (2.2)
Eye disease causes visual field loss	7 (3.8)
Don't know	124 (67)
Awareness of glaucoma (n=185)	
Aware	32 (17.3)
Not aware	153 (82.7)

All the participants who were aware in the study were Libyan with a mean age of 42.18±9.22 years(range 35-63)years, 50% of them were in the age group(30-39years), which was found to be statistically significant (*P*= 0.04) and 22 (68.6%) were female which was also statistically significant (*P=0.02*). Table 3 shows the awareness of glaucoma and related variables.

Table 3: Awareness of glaucoma and related variables (N= 32)

Variable	Number (%)
Age (years)	
30-39	16 (50)
40-49	8 (25)
50-59	5 (15.6)
60-69	3 (9.4)
Gender	
Male	10 (31.2)
Female	22 (68.8)
Education level	
Illiterate and primary school	5 (15.6%)
Intermediate and high school	10 (31.2%)
Graduated and above	17 (53.2%)

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Occupation	
Housewife	7 (21.9)
Government employee	23 (71)
Self employed	1 (3.1)
Retired	1 (3.1)
Family history	
Yes	9 (28.1)
No	21(65.6)
Don't know	2 (6.3)
Family member with Glaucoma	
Father	1 (11.1)
Mother	3 (33.3)
Brother	0 (0)
Sister	0 (0)
Others (2nd degree relative)	5 (55.6)
Source of information about glaucoma	
TV- Radio – Newspaper/magazine	6 (18.8)
Hospitals, Clinics, Clinical Employees	11 (34.3)
Family, Friends	15 (46.9)
Social media	0 (0)
Previous eye examination	
Never	5 (15.6)
Within 6 months	15 (46.9)
6 months to year	5 (15.6)
More than a year	7 (21.9)
Previous intraocular pressure measurement	
Yes	9 (28.1)
No	23 (71.9)
History of Diabetes Mellitus	
Yes	3 (9.4)

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No	29 (90.6)
History of hypertension	
Yes	7 (21.9)
No	25 (78.1)

The level of education did not seem to have any significant impact on awareness as 17 (53.2%) of aware participants had graduated and the P value for this was 0.26.

Twenty-three (72%) of aware participants were government employees which was found to be statistically significant (P=0.04).

A statistically significance relation was found between awareness and Diabetes Mellitus,

29 (90.6%) of aware participants were not diabetics (P= 0.03)

Out of all the participants who were aware of glaucoma, 15 (47%) got their information from family and friends, and this was found to be statistically highly significant (P<0.001). However, no statistically significance relation was found between awareness and time of last visit (P= 0.56), or Family history of glaucoma (P=0.55).

Knowledge of glaucoma

Out of the 32 participants who were aware of glaucoma, 11 (34.3%) had a good knowledge score (9-12), 19 (59.5%) had an average knowledge score (5-8), and the remaining two (6.2%) had poor knowledge score (1-4).

There was no correlation between the level of knowledge and variables such as gender, age, level of education, occupation, diabetic or hypertensive status, time of last ophthalmological visit, family history of glaucoma, or source of information about glaucoma

Discussion

Glaucoma is an irreversible disease that may remain asymptomatic until it becomes advanced. Early detection and treatment are key steps in preventing blindness from glaucoma. [6]

One in three people with glaucoma lose their sight before seeking medical attention. Therefore, increasing public awareness and understanding of glaucoma is critical to promoting public health behaviors and identifying unknown cases. Providing patients with the necessary information may be a clinically beneficial and cost-effective approach to reduce the progression of visual field deterioration and improve their compliance with treatment. [14]

A hospital-based cross-sectional study was conducted at the ophthalmology clinic affiliated with the Benghazi Teaching Eye Hospital to determine the level of awareness and knowledge of glaucoma among adults attending the hospital's outpatient clinic.

In the current study to be considered aware, participants must not only be familiar with the term "glaucoma" by answering the question "Have you ever heard of glaucoma?", but should also provide at least one accurate response to one of the previous questions mentioned before in methodology section. As many participants knew the

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term "glaucoma" but did not know much about it. The confusion between glaucoma and other eye conditions may explain why previous studies reported higher awareness levels. [15]

Out of 185 participants interviewed, 156 (84.3%) heard about glaucoma, but only 32 (17%) met the criteria for being aware of glaucoma. All aware participants were Libyan with a mean age of 42.18 ± 9.22 years. Among them, 69% were female (P=0.02), and 72% were government employees(P=0.04). There were 29 (91%) aware participants who are not diabetics (P= 0.03) and 47% of aware participants got their information from family and friends (P<0.001). No significant relation was found between awareness and time of last visit (P= 0.56), or family history of glaucoma (P=0.55).

In Tehran, research was conducted on inhabitants with a mean age of 56.2±9.0 (range 45 to 95) years, which revealed that 46.6% of Iranian participants were familiar with glaucoma, while only 19.2% were able to provide a simple, correct definition of the disease.[16] Our study results are comparable to this 19% figure, based on our definition of awareness.

In a study conducted on glaucoma patients from Upper Egypt, it was found that only 15.5% of the patients were aware of glaucoma. [17]However, it's important to note that the study defined awareness as simply having heard of glaucoma. On the other hand, our definition of awareness is broader, and therefore we consider their results to be much lower compared to ours. That study found that the lower percentage of awareness could be attributed to several factors, such as a lack of resources, caregiver time, knowledge, training, and practices for prevention, detection, and treatment.[17]

In Jordan, the level of awareness was much higher than our study results, with 81.6% of the population being aware of the disease. However, the definition of awareness in Jordan's study included having simply heard about the disease. [13]On the other hand, in their study, only 34.2% of participants were able to define glaucoma correctly which is still considered higher than our results, which they attributed to their population's high educational level in addition to strong social and family ties encouraged information sharing about diseases as family members, friends, and relatives were the primary sources of information about glaucoma for most participants. [13]

A study carried out in Ethiopia, using the same awareness definition as ours, showed a significantly higher level of awareness (35.1%) as compared to our study. [11] This difference in awareness levels could be attributed to the recent increase in attention given to glaucoma, as well as the expansion of eye care services provided by the growing number of eye care professionals in Ethiopia. [18]

A study was conducted on 5000 residents of rural North India, they found that although 3602 (73%) participants had heard about glaucoma, only 409 (8.3%) were aware of it after answering four additional questions. [19]This low percentage of awareness could be due to the location of residence in rural areas, unlike our study which was conducted in a hospital-based setting.

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The mean age of the aware participants in the present study was 42.18±9.22 years and half of them fell in the age group30-39years, which was found to be statistically significant (P= 0.04). this is consistent with a previous study demonstrating that individuals in the age range 35–44 years were more aware than those who were older. [11]

In our study, we found a statistically significant relationship (P=0.02) between gender and awareness. Out of all the participants who were aware of glaucoma, 22 (69%) were female. Previous studies have conflicting reports regarding the relationship between gender and level of glaucoma awareness. Some studies suggest that females tend to have a higher level of awareness, [6,20]while others suggest that males are more aware.[21,22]However, some studies have not found any significant relationship between gender and glaucoma awareness.[23,24]There appear to be diverse correlations between age, gender, and awareness of glaucoma, which may be due to differences in the target population and educational systems of various communities.[16,19]

In the present study, 17 (53%) of the aware participants were graduated, this was statistically not significant (P= 0.26). multiple studies showed that awareness was associated with higher education levels[13,19]Although a study done in Switzerland found that there is no correlation between awareness and the level of education.[25]

However, it was found that 32 (72%) of participants who were aware were government employees which was statistically significant (P=0.04), this is consistent with a previous study that showed that occupational status is significantly associated with the level of knowledge in the community,[21]being employed with a constant income is associated with more awareness. [26]In contrast,other studies have found no association between occupational status and knowledge of glaucoma, [11,16]

In the present study, out of all the participants who were aware of glaucoma, 15 (47%) got their information from family and friends, and this was found to be statistically significant (P<0.001). However, no statistically significance relation was found between awareness and time of last visit (P= 0.56), or Family history of glaucoma (P=0.55).

Several studies have shown that close friends and family are the most common sources of glaucoma information, [12,19, 27] while others have shown that media, such as television, [26] or healthcare professionals are the main sources of information.[28]

A study done in Southall; west London,-showed the crucial role of media in raising awareness of glaucoma. In their study, before they did the health campaign, only 22% of people had heard of glaucoma, and the majority had learned about it from their general practitioner, friend, or relative. However, after the public health education initiative, 69% of people had heard about glaucoma from the radio, and the percentage of people who had heard of glaucoma had risen to 53%.[29]

There is a statistically significant relationship between glaucoma awareness and Diabetes Mellitus, according to the findings of our study, as 29 (91%) of participants who were aware of glaucoma were not diabet-

ics (P= 0.03), which is consistent with the findings of other researchers such as _Soqia Jet al [12]and Al-Naggar et al [26]who also found no relation between chronic diseases and the awareness of glaucoma. This suggests that physicians can play a positive role in increasing screening rates by referring more patients to ophthalmologists. [30, 31]

In our study, 32 participants were aware of glaucoma, out of which 11 (34.3%) had good knowledge, 19 (59.5%) had average knowledge, and the remaining two (6.2%) had poor knowledge, This is better than the Syrian study which showed people with good knowledge were only 8%, people with average knowledge were 15% and the people with poor knowledge were 77%. [12] Thus, 94% of the aware participants in our study had average to good knowledge, compared to only 23% in the Syrian study. This difference in knowledge levels may be related to the definition of awareness in both studies. In the Syrian study, awareness was defined as having heard of glaucoma,and it is obvious that knowledge is determined by the awareness definition. [12]

However, the 34.3% of good knowledge in our study is lower compared to previous studies conducted in Ethiopia (49.6%) [11]and Southwest Nigeria (88.3%). [32]This difference in knowledge levels could be attributed to the public awareness campaigns conducted in Ethiopia to educate people about glaucoma. [18]Additionally, the participants in the southwestern Nigeria study were health workers, who were expected to have a better understanding of the disease.[32]

This is the first glaucoma awareness study in Libya; however, it was limited by the fact that it was conducted in an ophthalmology clinic. As a result, it cannot be depended on to represent the community's overall awareness of glaucoma. It just provides a basic idea, and another population-based study needs to be performed to acquire a more exact knowledge of glaucoma awareness.

Conclusion

This study revealed a low awareness of glaucoma (17%) among attendants to the Out-Patient Ophthalmology Clinic associated with Benghazi Teaching Eye Hospital, with half of them being in the age group of 30-39 years. Among the aware participants, 69% were females, and their primary information source was family and friends (47%). This highlights the low level of awareness among the Libyan population about the disease.

Recommendations

Effective educational campaigns and media strategies are needed to improve knowledge levels and reduce blindness caused by glaucoma.We recommend doing the questionnaire after a campaign on different platforms to educate people about glaucoma and test their awareness of it.

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Dimension and morphological variation of the sella turcica in Libyan adults in Benghazi using CT scan

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Original Research Article

Abstract

Background: The sella turcica is a significant anatomical structure used to assess sellar and parasellar pathologies, as well as in orthodontic procedures.

Normal sellar anatomy varies significantly between different populations. Currently, there is insufficient knowledge about the sella turcica among the Libyan community.

Aim: The aim of this study is to evaluate and assess the correlation between sellar dimensions and morphological variants with gender.

Results: Data from computed tomography of 146 Libyan adults (66 females and 80 males) aged from 18 to 70 years was analyzed using SPSS. The mean length, depth, and anteroposterior diameter were 9.924±2.001mm, 8.575±1.651mm, and 12.502±1.912mm, respectively. The round shape was the most common, found in 54.8% of subjects, followed by oval (32.2%) and flattened (13%). When assessing whether gender plays a role in the size and shape of the sella turcica, there was no statistically significant difference between males and females in relation to all sellar measurements and shapes.

Conclusion: The results of this study can be used as a reference standard for the Libyan population in various medical specialties, including radiology, neurosurgery, forensic medicine, and orthodontics. This can aid in the early diagnosis of pathologies, leading to better management and follow-up. Additionally, the findings can serve as a basis for further international research investigations.

Keywords: sella turcica, variation, hypophysial fossa, pituitary gland.

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Introduction:

Sella turcica (ST) is a concavity in the body of the sphenoid bone, that composed of the anterior wall (tuberculum sellae) and the posterior wall (dorsum sellae), both contains two lateral rounded projections (anterior and posterior clinoid processes) respectively. As well as the hypophysial fossa which is the central deep area that hosts and protects the pituitary gland.[1] The pituitary gland is the master gland of the body, which have about 1g of weight and 1cm in diameter. It is responsible for secretion of important hormones for example: growth hormone, follicle-stimulating hormone, and luteinizing hormone, all are essential in growth and various physiological functions.[2]

Pathologies in the pituitary could be reflected as alterations in the dimensions of the ST as their development is clearly related. [3] In addition, the ST has significant anatomical relations with various structures, including sphenoid air sinus, cavernous sinus, optic chiasm, and hypothalamus which make it crucial for neurosurgeons in order to conduct a safe surgical intervention.[4]

Furthermore, as the ST size increases during childhood, it is beneficial in forensic medical investigations for post mortem age determination.[4] Moreover, by its location in the middle cranial fossa the ST considered as a fixed landmark in cephalometric analysis, which is extremely important in orthodontic field in order to help them to decide about the most appropriate plane of management and follow up. [3,5-7]

Depending on the literature, this area has great alterations among different people,[7,8] and all established as normal variants, hence, knowledge about the normal structure of ST will help the doctors in different specialties to diagnose and manage many associated diseases involving the pituitary gland and related structures.

Advanced imaging methods has been recently used to define the morphology of ST; in the current study we used computed tomography (CT) depending on its ability to define the ST as a bony structure other than the surrounding tissues.

However, up to the time of writing this study information about ST among Libyan subjects remains unidentified. Accordingly, this study is focusing on demonstrating the different shapes and measurements of ST in Libyan adults. Moreover, as sella variants appear among different genders, races, and geographic areas hence the results of this study will be useful as additional information to the published researches in the global data.

Aim: Evolution of dimensions and morphological variants of ST among Libyan adult using CT scan in relation to gender.

Materials and Methods:

This cross-sectional study involved retrospectively collecting data from head CT radiographs obtained from various healthcare centers in Benghazi over a 10-month period from May 2020 to March 2021. The images were obtained using conventional CT and GE Optima 128-slice scans. A total of 174 patients were initially included, but 28 were excluded, only146 patients were included in the study (66 females and 80 males) aged 18 to 70 years old. All patients did not have any evidence of pituitary gland anomaly or systemic disease related to the sella turcica. Exclusion criteria included subjects below 18 years old, images of inadequate quality, and individuals with pathological features in the area of study or who had undergone surgical intervention in the craniofacial

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area.

The Radiant DICOM Viewer 2022 software was used to visualize the CT images in different anatomical planes to obtain the precise linear dimensions and shape of the sella turcica. The data was analyzed using the IBM SPSS statistical package version 25.0, with statistical descriptions including mean, minimum, maximum, and standard deviation (SD). The association between gender and sella turcica classification was estimated using the Chi-square test. The variables were normally distributed, and an independent T-test was utilized to analyze the differences in sella turcica measurements with respect to sex.

Size of ST

The linear dimensions were used according to the approved methods described by Silverman FN (1957).[9] All reference lines were measured in the midsaggital plane (Fig. 1) as the following:

- Length: a straight line from the tip of the tuberculum sellae to the tip of the dorsum sellae.
- Depth: a perpendicular line from the line drown above to the floor of the sella.
- Anteroposterior diameter: a line from the posterior part of the tuberculum sellae to the deepest point in the floor of the fossa.

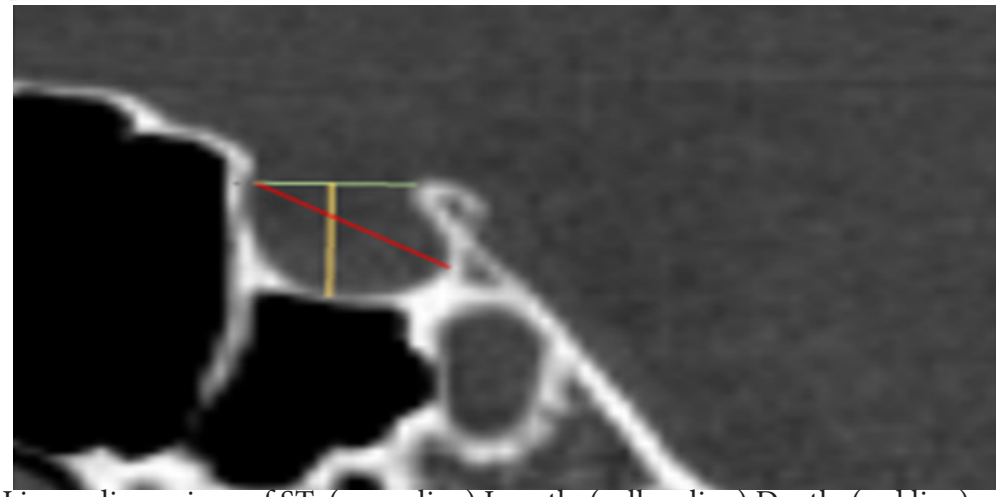

Fig. 1: Linear dimensions of ST: (green line) Length; (yellow line) Depth; (red line) anteroposterior diameter

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Shape of ST

Morphological appearance of ST has been classified depending on the floor of the sella turcica as declared by Camp JD,[10] into three types: round, oval, and flattened (Fig-2).

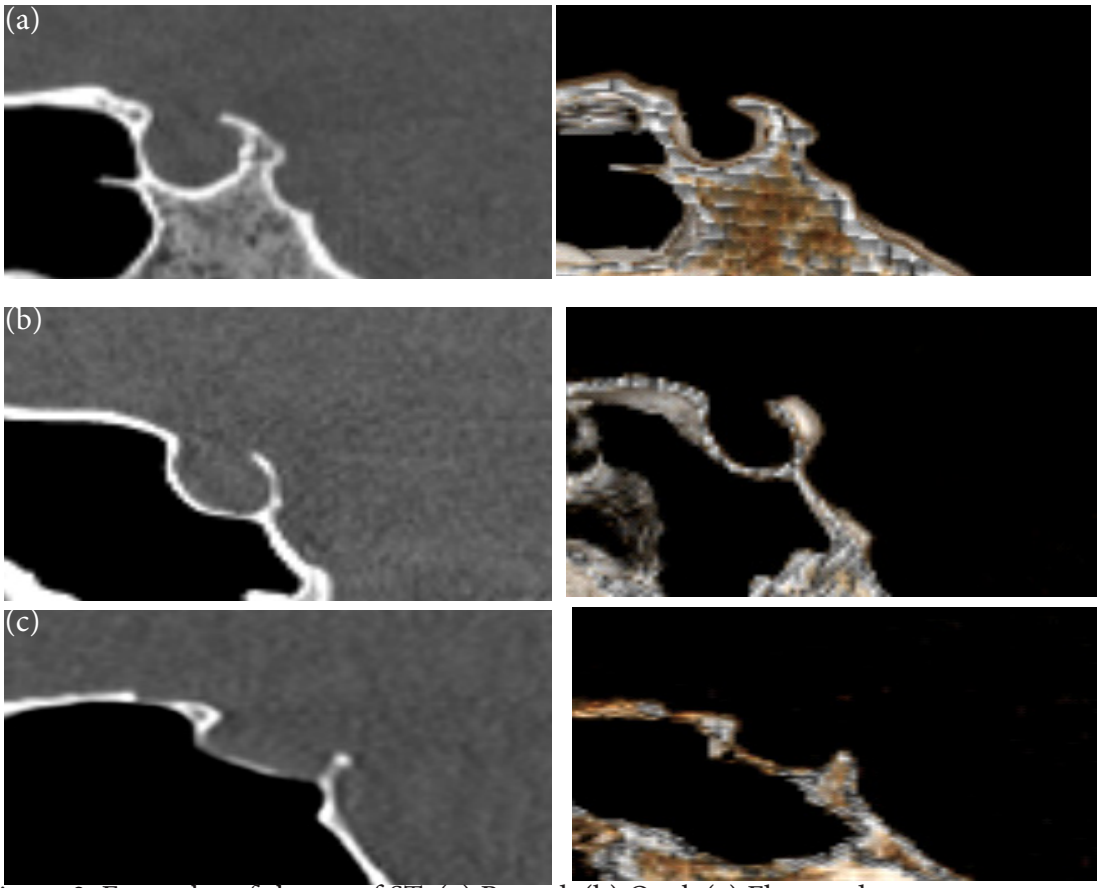

Figure 2. Examples of shapes of ST: (a) Round; (b) Oval; (c) Flattened.

Results:

Size the ST

The dimensions of ST of 146 subjects located in the midsagittal plane are described in table 1. Sellar length, depth, and antero-posterior diameter were 9.924±2.001mm, 8.575±1.651mm, and 12.502±1.912mm respectively. When linear dimensions compared between females and males, there was no statistically significant difference among all three elements (P>0.05).

Shape of ST

The shape of ST was appeared to be round in 54.8% of subjects, which is considered as the most common form, followed by the oval shape which exhibited in 32.2%,

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and the least repeated is flattened in 13% of subjects. On assessing the morphology of ST on each gender; the distribution frequency of different morphological variants in both genders is summarized in table 2, and the correlation between the two factors was not statistically significant.

Table 1. Descriptive Statistics of Dimensions of ST According to Gender.

	Sex	Mean	SD	Min	Max	Average (Female & Male)	P-value
Length	Female	9.937	1.835	6.052	13.917	9.924	0.943
	Male	9.913	2.139	4.582	16.258		
Depth	Female	8.830	1.714	4.422	13.728	8.575	0.090
	Male	8.365	1.578	5.275	15.786		
A/P Diameter	Female	12.694	1.872	8.345	17.900	12.502	0.270
	Male	12.343	1.942	9.199	18.241		
Independent T-test, A/P = Anterior /posterior diameter SD= standard division, Min= Minimum and Max = Maximum							

Table 2. Frequency of distribution of different shapes of ST according to gender.

	Female (n=66)	Male (n=80)	Total	P-value
Round	33	47	80	0.225
Oval	26	21	47	
Flattened	7	12	19	
Chi square, n= number of subjects				

Discussion:

This study establishes and analyzes the linear dimensions of ST and morphological variants in different genders. Sellar dimensions were described by many studies and summarized in table 3.

Table 3: Comparison between Different Studies in Linear Dimensions of ST.

	Length (mm)	Depth (mm)	Anteroposterior diameter (mm)
Current study	9.92± 2.00	8.58± 1.65	12.50± 1.91
Nigeria [11]	9.8	8.6	11.5
Iraq[12]	8.46	7.44	10.79
Turkey[13]	10.32± 1.75	7.99± 1.33	11.87± 1.66
Ethiopia[14]	10.23± 1.73	7.12± 1.34	11.89± 1.94

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A comparison between males and females in terms of length, depth, and anteroposterior diameter in the current study concludes that there is no significant difference between genders was found, these results are consistent with previewed studies in Nigeria[11], Iraq,[12] Turkey,[13] and Bangladesh[15]. This is also in agreement with study conducted among Libyan population in 2021[16]. On the other hand, Abebe G (2021),[14] conducted study upon 496 subjects, showing the difference between both genders was significant in depth, which the females had higher value than males with 7.48mm and 7.01mm respectively.

The shape of ST is classified based on the contour of the floor, tuberculum sellae, anterior and posterior clinoid prosses, many classifications has developed over time. Ruiz C,[17] classified sella into U, J, and shallow types. Recently, Axelson et al,[18] established six main types including as normal shape, oblique anterior wall, sella turcica bridging, double contour of the floor, irregularity in posterior part of dorsum sellae (notching), pyramidal shape of the dorsum sellae.

The classification used in this study has been established by Camp JD,[17] that categorized the floor of ST into three basic shapes (round, oval, and flattened), and stated that the most common type was the round which is complementary to the results of the current study, in which the round shape occupied 54.8% followed by oval (32.2%) and the flattened was the least frequent (13%), in comparison to study conducted by Yasa Y, in Turkey upon 177 individuals the results were similar, round shape was the most frequent (69.5%), on the other hand flattened was the second most common (16.4%), lastly oval (14.1%).[20]

Alternatively, Mushrath Islam et al, stated that the oval is the most frequent (48.19%) then flattened (28.3%), and then rounded (23.4%) in Bangladeshi population.[15]

When compared to gender; authors in Turkey did not demonstrate a statistically significant difference between males and females in shape distribution, [13] these results are in agreement with our findings. In contrast, another study has been established among Nigerian people and revealed a highly significant aberration.[19] Furthermore, depending on a study has been conducted by Muhammed FK, in purpose of comparison between variations in ST dimensions between three genders (Bosnian, Nepalese, and Chinese); a significant correlation was detected between length of ST and gender of Bosnian individuals, whereas none of sella turcica dimensions and sex of Nepalese and Chinese subjects were affected.[8] although, these researches used the lateral cephalogram as their imaging method which could be responsible to some alterations in the final results.

The noted alterations between ST measurements and morphological types in previous researches may be due to differences in the group of study, methodology, ethnicity, and geographic region.

Recommendations:

In order to establish more extensive information among Libyan population, larger sample size, as well as, individuals from other regions in Libya would give a more comprehensive result. Furthermore, we recommend performing such study on individualized age groups in future researches.

Conclusion:

Anatomy of ST can be investigated using CT effectively; the sellar dimensions provided

from this study are 9.924±2.001, 8.575±1.651, and 12.502±1.912mm for length, depth, and anteroposterior diameter respectively. The most common morphological variant is round (54.2%). No statistically significant difference between females and males was detected in either shape nor linear dimensions. Similar results were illustrated by most of the studies in the literature. The morphology and dimensions of sella turcica vary from person to another, this study provides information about Libyan population for clinicians in varies medical specialties including neurosurgery, radiology, orthodontics, or forensic medicine, in order to detect any deviation in shape and dimensions of ST and estimate pathologies in pituitary gland and surrounding structures, alongside as additional information to the published global data.

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Estimation of Eyeball Volume using computed tomography in a sample of Libyan population

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Original Research Article

Abstract

Background: A few ocular illnesses that change the eye's dimensions may cause visual anomalies such as myopia, hypermetropia, presbyopia,macrophthalmia, microphthalmia, and astigmatism. In accordance, the knowledge of eyeball volume is mandatory; its significant is quite clear in understanding illnesses such as Coats' disease, phthisis bulbi, and persistently hyperplastic primary vitreous that are linked to decreased ocular volume.

Aim: This study aims to evaluate eyeball volume using computed tomography in a Libyan population to be used as a reference in diabetic retinopathy (DR) and macular edema screening programs.

Patients & Methods: This is a retrospective study of the CT medical records of 100 consecutive subjects aged 20 to 80 years who were scanned in the diagnostic radiology department of the National Cancer Center, of Benghazi (NCCB) for different causes during the period from December 2023 to April 2024.

Results: This study included 100 patients; 63 (63%) were males, and 37 (37%) were females. The mean age was 43.12 ± 25.24 years for males and 41.24 ± 31.73 years for females. There was no statistically significant difference in the mean age between both sexes. There was no statistically significant difference in the mean eyeball volume for both sexes concerning age. The right eyeball volume was higher for both males and females.

Conclusion: Ocular volume correlated positively with the age of the patients, and males had slightly larger eyeballs compared to females. This data might be useful in ophthalmological, oculoplastic, and neurological practice. The right eyeball volume was higher on the right for both males and females.

Keywords: Computed tomography, eye volume, ocular volume, Libya.

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Introduction

Eyeball volume estimation is essential in ophthalmology because of its clinical significance. Despite its importance, this field has received relatively low attention, as it does not directly impact human health. [1] Therefore, knowing the eyeball volume can help in planning treatment or surgical application, as well as for monitoring the impact of specific disorders. [2] Understanding the anatomical variations between different small-eye disorders and the diseases that may be linked with each might help design surgical techniques for reducing complications and optimizing positive outcomes. [3]

In ophthalmology, eyeball trauma, cancer, congenital glaucoma, retinoblastoma, and some other disorders can change the size of the eyeball.[4] The oblate/prolate shapes of the eyeball can be traced already in newborns and can influence the development of myopic refractive errors .[5]

More recent CT scans have improved oculometric studies and allowed for the measurement of ocular size. By using these data, the link between ocular volume, age, and sex can be better understood. [4]

Computed tomography is a non-invasive method of measuring ocular dimensions, although it exposes users to ionizing radiation. When compared to other imaging modalities for in-vivo assessment, computed tomography (CT) provides precise measurement values. While the ionizing radiation effect restricts its normal use, CT can be deemed indispensable in situations when conventional methods of precise ocular dimension measuring are either unsuitable or contraindicated. It provides anatomical information about the surrounding soft tissues and bony components of the eye in addition to its capacity to assess dimensions. Additionally, various associated extra-ocular abnormalities, such as cerebral tumors, may be found during a single examination. [6]

Aim of the Work

The objective of the study was to evaluate normal eyeball volume using computed tomography and determine normative data for the Libyan population.

Patients and Methods

This is a retrospective study of the CT medical records of consecutive 100 subjects aged 20-80 years in the diagnostic radiology department of the National Cancer Center, Benghazi (NCCB) from December 2023 to April 2024.

The cohort included cases that were scheduled for CT scans of the head and neck area. These scans were requested by the emergency room due to various medical circumstances in each case. For this investigation, we focused only on instances that did not involve any neurological or ophthalmological conditions. The exclusion process included patients with known ophthalmologic or neuro-ophthalmologic conditions, as were those with orbital and ocular trauma.

The CT GE Revolution scanner was the one that was utilized. The axial length or ante-

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rior-posterior diameter of the eyeball was used to measure the ocular dimensions, which also included the anterior chamber depth, lens thickness, and vitreous length. The visual axis is defined as the distance that runs through the anterior corneal surface to the posterior wall of the sclera in an axial view. The maximum transverse distance (retina to retina) in axial view between the temporal and nasal ends of the globe's inner side was used to define the breadth, also known as the transverse diameter. The overall volume of the eye was computed using the averages of the length and breadth parameters = anterior-posterior diameter (cm), that is, axial diameter of the eyeball, TR = transverse diameter (cm) of the eyeball.

Rationally the eyeball is ellipsoidal in shape, however, it is assumed to be spherical for volume estimation by using the following formula,[7] $V = 4/3\pi r^3$ (cm^3), where r = (AP + TR)/4; AP = anterior-posterior diameter (cm), that is, axial diameter of the eyeball, TR = transverse diameter (cm) of the eyeball The dimensions were measured twice by the 2 researchers and the average recorded.

Statistical analysis

The statistical software SPSS version 21.0 was used to do the statistical analysis after the data were imported into Microsoft Excel. The qualitative (categorical) variables were presented as percentage and frequency, and the quantitative (numerical) variables were represented by mean and SD. The frequency was compared using the Chi-square test, while the mean values between the two groups were compared using the Student's t-test. When the P-value was less than 0.05, it was considered significant.

Results

Table 1: Distribution of the subjects by age and sex

	Male	Female	Frequency (%)
Age			
21–30	11 (17.5)	7 (18.9)	18 (18)
31–40	4 (6.3)	6 (16.2)	10 (10)
41–50	9 (14.3)	7 (18.9)	16 (16)
51–60	19 (30.2)	8 (21.7)	27 (27)
61–70	15 (23.8)	6 (16.2)	21 (21)
71–80	5 (7.9)	3 (8.1)	8 (8)
Mean age	43.12 ± 25.24	41.24 ± 31.73	
Total	63 (100)	37 (100)	100 (100)

The study population consisted of 100 subjects, with 63 males (63%) and 37 females (37%). The participants' ages ranged from 20 to 80 years. The mean age was 43.12 ± 25.24 years for males and 41.24 ± 31.73 years for females. There was no statistically

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significant difference in the mean age between the two sexes (P = 0.12). (Table 1).

Table (2): Mean eyeball volume of both eyes according to age of the male subjects studied

	Frequency (n)	Right eye volume (cm^3)	Left eye volume (cm^3)
Age			
21–30	11	5.9±0.29	5.6±0.14
31–40	4	5.85±0.27	5.95±0.32
41–50	9	6.1±0.27	5.9±0.27
51–60	19	6.3 ±0.34	5.8±0.29
61–70	15	6.7±0.23	6.5±0.32
71–80	5	7.1 ±0.31	6.90±0.30
Total	63	6.45 ±0.25	6.25±0.30

Table (3): Mean eyeball volume for both eyes concerning age of the female subjects studied.

	Frequency (n)	Right eye volume (cm^3)	Left eye volume (cm^3)
Age			
21–30	7	5.85 ± 0.32	5.75 ± 0.42
31–40	6	5.65 ± 0.27	5.6 ± 0.32
41–50	7	5.95 ± 0.35	5.9 ± 0.32
51–60	8	6.15± 0.24	6.1±0.29
61–70	6	6.5±0.18	5.45±0.32
71–80	3	6.95±0.42	6.84±0.25
Total	37	6.37±0.35	6.19 ±0.38

The mean eyeball volume for both sexes, categorized by age, is presented in Tables 2 and 3. The analysis indicates that the mean eyeball volume is slightly larger in males compared to females. Specifically, the measurements are as follows: for males, the right eye has a volume of 6.45 ± 0.25 cm^3, and the left eye is 6.25 ± 0.30 cm^3. For females, the right eye measures 6.37 ± 0.35 cm^3, while the left eye measures 6.19 ± 0.38 cm^3. Additionally, the volume of the right eyeball was greater than that of the left for both males and females, although this difference was not statistically significant (P = 0.11). Overall, the patterns of eyeball volume were similar for both genders.

Discussion:

Computed tomography (CT) has been a standard tool in ophthalmology for many years, offering thorough investigations. Thus, despite being valuable for diagnosing various neurological problems as well as vi-

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sual diseases, the gross anatomy of the eye receives less attention. In ophthalmology, the size of the eyeball may change due to various conditions, including retinoblastoma, congenital glaucoma, cancer, and trauma. [2]

This is a retrospective study analyzing the CT medical records of 100 consecutive subjects from various age groups, ranging from 20 to 80 years old. These subjects were admitted to the Diagnostic Radiology Department of the National Cancer Center, Benghazi (NCCB), between December 2023 and April 2024. The purpose of the study was to evaluate normal eyeball volume using computed tomography and to establish normative data for the Libyan population.

This study demonstrated a gradual increase in eyeball volume with age, with older age groups exhibiting the highest values for both males and females. This trend can be attributed to the continuous growth of the eyeball over time, and it was particularly pronounced in males.

One possible explanation for this finding is that the eyeball functions as a pressurized chamber, with the corneoscleral coat confining the intraocular pressure. This helps maintain the eye's dimensions, with the uveal circulation serving as the source of intraocular fluid. As a result, ocular pressure remains stable throughout life, even in older individuals. Overall, this leads to a consistent preservation of adult eyeball diameter once the maximum size has been reached or even a gradual increase of these values among elderly subjects.

In their study, Ogbeide and Omoti [8] reported an increase in eyeball dimensions with age. They found that eyeball growth was not related to the growth of skeletal, genital, or lymphoid systems. Instead, it resembled the growth patterns of the brain and central nervous system rather than those of the entire body. The results also indicated that both the eye and brain exhibit unique precocious growth during the active growing phase. Furthermore, the findings were comparable to those of Sahin et al. [9]

The orbit and ocular volumes may now be quantified volumetrically thanks to sectional imaging methods. Magnetic resonance imaging (MRI) offers the best resolution for soft tissue contrast and allows for multiplanar imaging without the use of ionizing radiation. However, CT imaging remains a powerful tool for providing a precise representation of skeletal structures. CT provides higher spatial resolution than MRI, making it superior for imaging small structures and displaying fine details, particularly in skeletal anatomy.[10]

Tabernero & Schaeffel [(11)] stated that the eyeball sizes and shapes differed significantly across the participants. In actuality, the transverse diameter difference between the eyes measuring 21 mm and 27 mm is greater than half a centimeter. The extremes do exist, even though they are uncommon. The axial diameter of the eye is altered by myopia and hypermetropia, but other siz-

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es remain the same. Thus, we recommend determining the transverse diameter for a feasible assessment of the eyeball size in an ophthalmologic or neurologic clinic. There is a correlation between the transverse diameter and the orbit breadth. Thus, this diameter can also be helpful in oculoplastic computations. However, there is no relationship between the depth of the orbit and myopic and hypermetropic increases in anteroposterior (axial) diameter.

regarding the investigation's methodology, CT is frequently performed as a first line of inquiry in emergency rooms and is commonly utilized in ophthalmology. Computed tomography has been used to measure normal in vivo ocular size at least since the early underestimated by CT measurements of the ocular diameters [12]. Accurate results are also obtained from CT measurements of the ocular diameters published by other authors. Although measuring sagittal diameter with CT is a little complex, there were no obstructions that could have affected the accuracy of the data when measuring transverse and axial (anteroposterior) diameters. [2]

Limitation:

The clinical application of the study and its usefulness have not been discussed in this study, which could have further enhanced its usefulness.

Conclusion:

This study has provided reference values for eyeball volumes in a sample of Libyan individuals. The findings indicate that ocular volume positively correlates with patient age and that males generally have slightly larger eyeballs than females. These data could be beneficial in ophthalmology, oculoplastic surgery, and neurology.

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Histopathological study of lung cancer: Rate of different types of bronchogenic carcinoma of follow up cases in Benghazi Medical Centre

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Original Research Article

Abstract

Introduction: Lung cancer has transformed from a relatively rare disease to a worldwide health problem and a major global health concern. It is the second most common cancer in both men and women, after prostate and breast cancer respectively. It has become the leading cause of cancer-related death.

Aim: This study is conducted to shed the light on the rate of different types of lung cancer among patients who were diagnosed and treated at Benghazi Medical Center.

Material and methods: The current study was a retrospective study, carried on 269 Case of confirmed primary lung cancer diagnosed between the years 2015, to 2018. Data was collected from the Oncology Department of Benghazi Medical Center. The data was analyzed using SPSS version 23, and was plotted into tables and figures by Microsoft Excel 2010.

Results: This study revealed that the common age group of patients was between 61–70 years, with a mean age of 62.3±3.75 (SD) years. The disease was more common in males than females. Most of the patients were active smokers, and about 92.9% of the patients have no past medical history of respiratory diseases. Non-small cell carcinoma was the commonest type of lung cancer (71.4%), out of which adenocarcinoma represented 54% of the cases. Almost all (92.9%) cases were presented with stage IV of the cancer at the time of diagnosis, which meant that the cancer was already metastasized to distant organs. In about 72.5% of the cases, the tumor was in the right side of the lung, in the upper region. There was a statistically significant difference between the mean age of males and females. Also, there was a significant relationship between the adenocarcinoma subtype of NSCLC (None Small Cell Lung Cancer) and patients with no past respiratory diseases.

Conclusion: lung cancer is an aggressive malignant tumor which was very common among smoking Libyan males and usually associated with high mortality rate.

Keywords: bronchogenic carcinoma, squamous cell carcinoma. adenocarcinoma, smoking, small cell carcinoma.

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Introduction

Cancer is one of the major causes of death worldwide. Metastasis is the leading cause of cancer-related mortality (1).80-90% of cancers are caused by external environmental factors (carcinogens). In 2018, an evaluation of 2.2 million infection-attributable cancer cases was diagnosed globally. Lung cancer has been transformed from uncommon disease into a worldwide trouble and public health problem. In 1900, about 140 lung cancer cases had been published in medical literature, subsequently, findings of lung tumors in autopsied cadavers started to rise dramatically (2). Lung cancer is the second most common cancer in men after prostate cancer and in women after breast cancer. Annually, more patients die of lung cancer than of colon, breast, and prostate cancers combined (3).

A previous study in Libya, conducted between 1981 and 1985, found that lung cancer was the most common tumor (22.4%), among males who had been heavy smokers for 20 years or more (4). In the eastern part of Libya, lung cancer was the most common cancer among males, constituting 18.9% (5). In the central region of Libya, a previous study revealed that lung cancer ranked third (7.7%), following breast cancer and colorectal cancer (6).

Although, in 2004, research revealed that lung and breast cancer were the commonest causes of cancer deaths in eastern Libya (7). Still, there is Lack of the updated records about the incidence of cancer in Libya, both for the cancer in general and lung cancer in specific. Therefore, the trends of lung cancer distribution in Libya have to be compared to the regional and world wide data as this data can help improve the services provided by cancer facilities in many Libyan cities.

The aim

This study was conducted to determine the prevalence of different types of lung cancer among follow-up cases at the Oncology Department of Benghazi Medical Center during the period of time from January 1, 2015, to December 31, 2018.Also, it aimed to find out the possible relationship between the risk factors and types of lung cancer.

Patients & methods

This research was are prospective cohort study. A total of 269 cases of bronchogenic carcinoma was collected from the archive of Benghazi Medical Centre in the period from January2015 to December, 2018. Among many lung biopsy samples, only lung biopsy with malignant tumor were included in this study and the hematoxylin and eosin (H&E)-stained sections from all cases were examined under light microscope to determine the type of the tumor.

The histological diagnosis of bronchogenic carcinoma was correlated to many general factors, including age, gender, smoking status, past medical history of respiratory diseases, and family history of lung cancer. In addition, the site of the tumor, the size of the tumor, the stage of the cancer at the

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time of presentation, and the presence of metastas is were also being studied in this research. That is according to the information available in the files of these patients. Data was arranged in tables and was analyzed by IBM SPSS version 23. The results were posted in figures using Microsoft Excel 2010 as well as by SPSS.

Results

Age distribution

In this study, out of the 269-studied lung cancer cases, the mean age of the patients was 63 years(figure.1)

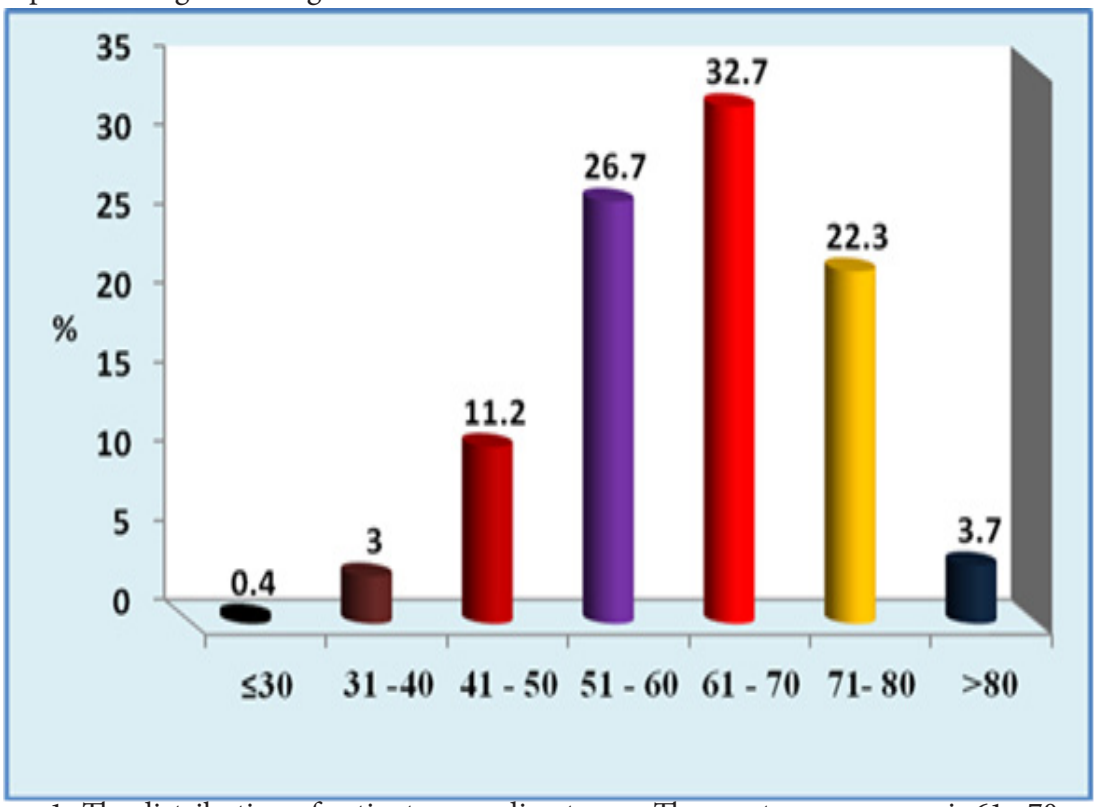

Figure 1- The distribution of patients according to age: The most common age is 61– 70 years, followed by the 51-60 years old.

Sex distribution

Among the 269studied cases, about 90% of the cases were males, while a small percentage of cases were females (less than 10%) (figure.2)

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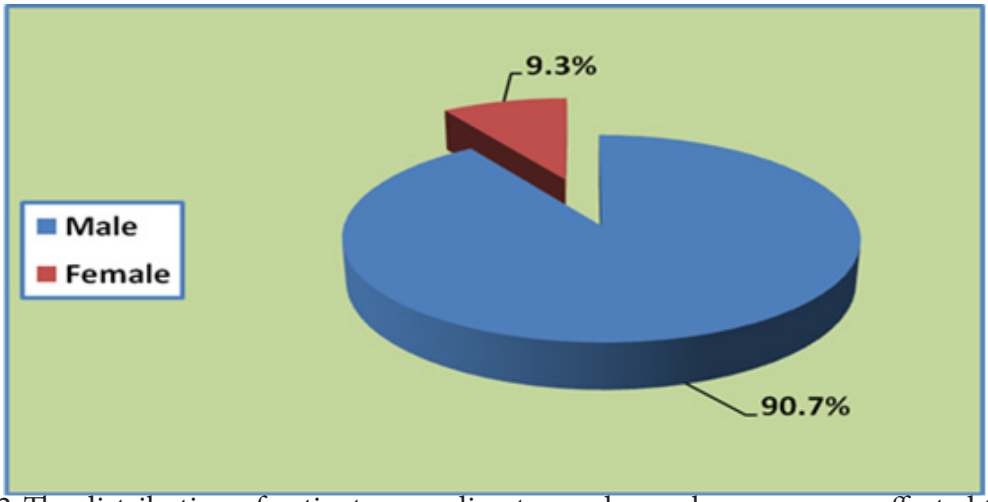

Figure 2-The distribution of patients according to gender, males were more affected than females with ratio of 10:1 respectively.

Smoking status distribution

In this study, more than 98% of patients were smokers, only a small percentage were nonsmokers with mean smoking duration of 40 years.

Family history, tumor subtype, and site

Most of the patients did not have family history of lung cancer.

More than 71% were diagnosed with NSCLC, out of which 54% had adenocarcinoma & 26% squamous cell carcinoma (figure 3). The majority of the recorded cases were infected in the upper part of the right lung (figure 4).

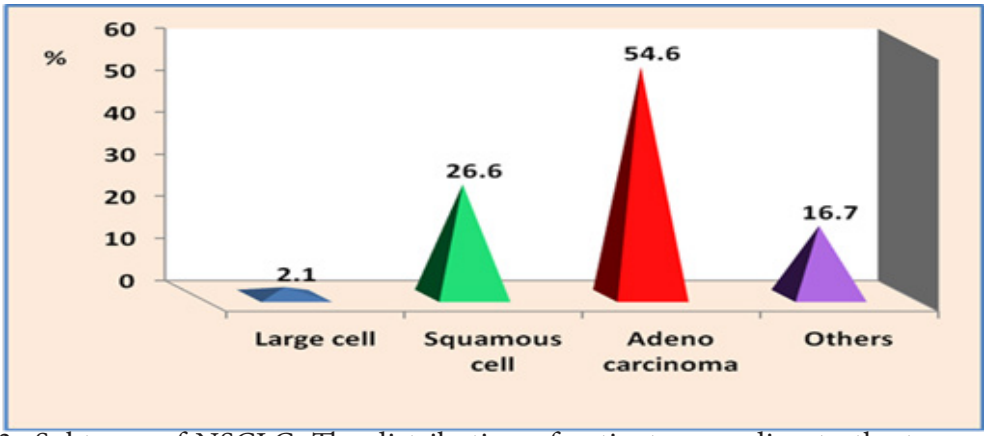

Figure 3- Subtypes of NSCLC: The distribution of patients according to the types of none small cell lung cancer. Adenocarcinoma was the most common type followed by squamous cell carcinoma.

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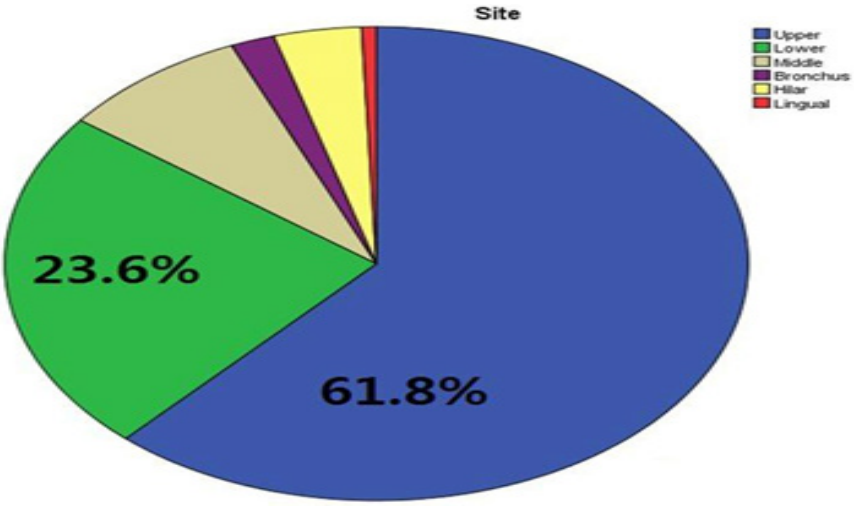

Figure 4- Distribution of patients according to the site of lesion; upper lobe was more affected than the other lung parts.

Previous respiratory diseases

The study of the distribution of patients according to previous respiratory diseases, revealed that 83.8 % of the patients had no previous history of RD(respiratory diseases) while only 6.8 % of had past chronic obstructive pulmonary disease(COPD) (figure 5)

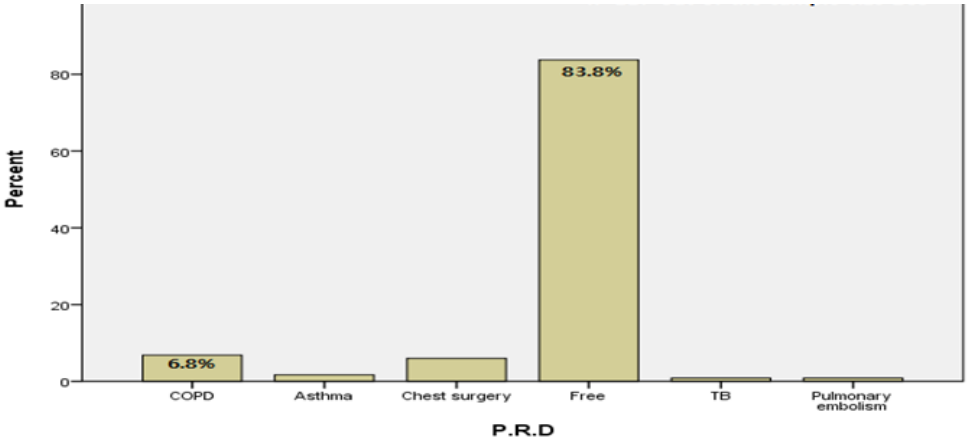

Figure5-Previous respiratory disease (PRD) distribution; PRD had no relation with lung cancer as most of the cases were with free medical history.

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Tumor stage and site of metastasis

In the time of presentation, more than 85% of patients were in the IV stage (figure 6) with metastasis in more than one organ, bone and brain were the most common sites of metastasis (figure7).

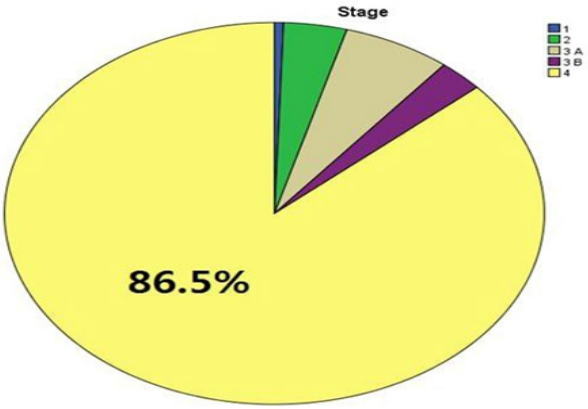

Figure 6- The distribution of patients according to stage of tumor, most of the patient were in stagre IV at the time of presentaion

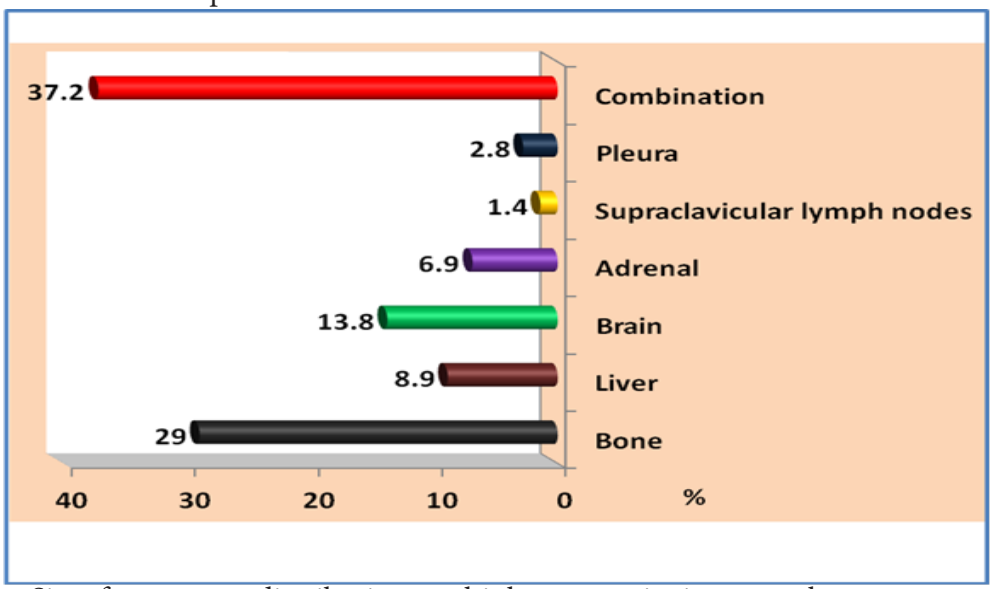

Figure 7- Site of metastases distribution, multiple metastatic sites were the commonest type of presentation followed by bone metastasis and then brain, liver and adrenal gland.

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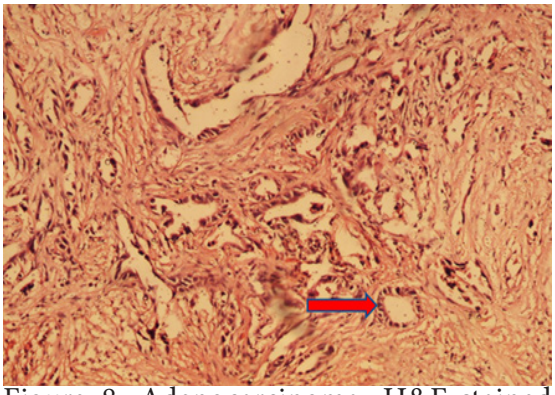

Figure 8: Adenocarcinoma: H&E-stained section from intra parenchymal tumor shows enlarged irregular glandular spaces lined by pleomorphic cells with enlarged nuclei (red arrow), decrease stroma between glandular pattern. (X100)

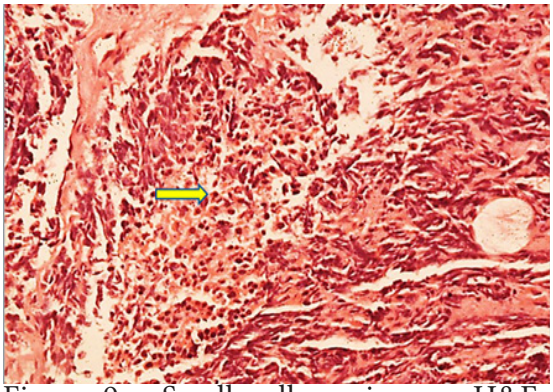

Figure 9: Small cell carcinoma: H&E-stained section from tumor in right bronchus inter Medius shows sheets of small dark round cells with round to oval hyperchromatic nuclei and scanty cytoplasm (yellow arrow). (X 200)

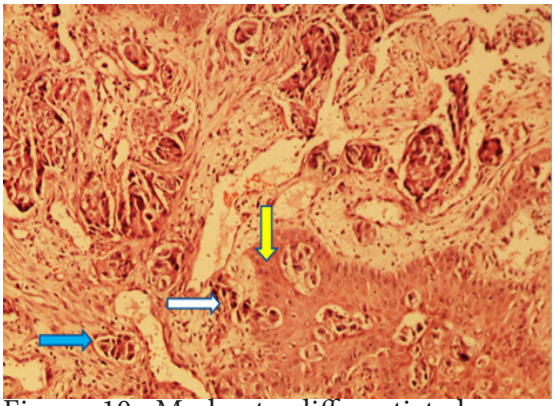

Figure 10: Moderate differentiated squamous cell carcinoma: H&E stained section from tumor in left upper bronchial wall shows fibrous tissue lined by hyperplastic squamous epithelium (yellow arrow) and infiltrated by clusters of malignant squamous cells (blue arrow), prescnce of intercellular bridge (white arrow), no evidence of keratin pearls (X100)

Discussion

Lung cancer is the second most common cancer in both men after prostate cancer and women after breast cancer. Annually, more patients die of lung cancer than of colon, breast, and prostate cancers combined (3).

The mean age of patients results resemble previous results of research done in the eastern part of Libya (8) and in other Arab countries (9). On the contrary the mean age of patients with lung cancer in USA is 71 years (10) probably, due to better quality of life and health service.

In Libya, men are more likely to develop lung cancer than women. This was proven by this study and a previous study in 2004 (8). The increase of the risk of lung cancer in males is

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also comparable with previous study done by Tol win et al. (12) who found that the male cases represent 53% and female cases (47%) of the sample size. This difference in disease distribution according to gender in our community reflecting the habit of smoking is not common between females in Libya

The predominance of the NSCLC between our patients was similar to the findings of a German study in which adenocarcinoma (figure 8) was the leading cell subtype in young male and female patients with lung cancer, whereas, among older male patients, squamous cell carcinoma (figure 9) was predominant (11). In an Egyptian study, adenocarcinoma in the sample size was the predominant, but it was more common in females than males (13).

The histological types of lung cancer in a recent study showed that 71.4% of the sample size diagnosed as NSCLC and only 6.3% were diagnosed as SCLC (figure 10) while 22.3% were diagnosed as lung cancer without classifying. Thai AA et al found that about 85% of all lung cancer cases were NSCLC, and 15% were SCLC (14).

Regarding NSCLC subtypes, the result showed that adenocarcinoma was the most common subtype (54.6%), followed by squamous cell carcinoma (26.6%), and large cell carcinoma was only 2.1%. This is consistent with a previous study done in USA where they found that adenocarcinoma was the most common histologic finding (54.7%), followed by squamous cell (29.4%) (15).

The current study revealed that lung cancer occurs more in the right lung (64.4 %) than the left lung (35.6 %) which is consistent with a previous study done by JiaB. et al (16). Left and right-side lung cancers might have different biological and gene mutation features. Tumors with epidermal growth factor receptor (EGFR L858) mutation are most commonly located on the right side, whereas tumors without EGFR mutation are found on the left side of the lung (17).

EGFR is a protein on cells that helps them grow. A mutation in the gene for EGFR can make it grow too much, which may cause cancer. About 32% of NCSLC cases all over the world involved an EGFR mutation. The most common subtype to have an EGFR mutation was adenocarcinoma (18).

In the present study, 86.5% of the recorded cases were diagnosed at stage IV, this result seems to be higher than the results obtained by Bryan S et al in Canada, where 49.6% of new diagnosed lung cancer cases presented at stage IV (19). This difference is probably due to the delay in seeking medical help in our cases and much better medical services in the western countries. This stage of lung cancer means that the cancer cells are already metastasized to distant organs, and according to recent studies, the target organs in order were the bone (29%) was the common site of spreading, followed by the brain (13.8%), the liver 8.9%, the adrenal gland (6.9%), in addition to pleura (2.8%) and supra clavicular lymph nodes (1.4%) of recorded cases with metastasis (n=145).

In Sweden, a study showed that the target metastasized organs were as follows: the brain (47%) was the common site of spreading, fol-

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lowed by the bone (39%), the liver (35%), the respiratory sys(22%) (20).About (46.7%) of females in this study showed the high percentage of bone metastasis than male who constitute only (27%).

Both preclinical and clinical research have found sex-based differences in bone metastasis development; these findings are most likely connected to the regulation of hormones and underlying biology associated with sexual dimorphism. Future research should focus both in vitro and in vivo on the idea that feminization of bone marrow by sex steroid delivery, or blockage can change results (21).

Regarding to smoking state in this study,(98.3%), were smokers and one of them was a female, a case of non-smoker female was diagnosed as lung cancer without classifying the type, but the male cases were diagnosed with adenocarcinoma lung cancer. This corresponds to a result of study on non-smoker patients in Egypt, where they found that adenocarcinoma was the most common subtype between un smokers (22). In addition to passive smoking as a risk factor for lung cancer in non-smokers, many researches revealed that radon exposure and domestic fuel smoke, infections such as Mycobacterium tuberculosis, and Human Papilloma Virus are also risk factors. Other less factors include inflammatory diseases such as asthma and sarcoidosis (23). The World Health Organization believes that lung cancer deaths globally will continue to increase largely as a result of raise in tobacco use, which is the leading risk factor for lung cancer. Despite efforts to curb tobacco smoking, there are about 1.1 billion smokers in the world, and if the current trends carry on, that number would increase to 1.9 billion by 2025 (24).

Concerning family history of the cancer, we found that there was a positive family history of lung cancer in (16%) of patients as well as positive family history of cancer in other organ away from the lung (44%), other patients have no family history of a cancer anyway (40%), whereas in Japan Yoshida K et al found that family history of lung cancer in first-degree relatives was associated with an elevation of risk of lung cancer among both genders (25). Adenocarcinoma subtype of NSCLC was the predominant subtype, while, in USA squamous cell carcinoma subtype of NSCLC was the most associated with familial history of lung cancer (26).

On the subject of past history of respiratory diseases, the current study revealed that about (83.8%) of patients presented with lung cancer had no history of respiratory diseases while only (6.8%) of patients had past history of COPD, this result is somewhat different from previous study by Brenner DR et al, where they concluded that past history of lung diseases are associated with an increased risk of lung cancer with the evidence among never smokers supporting a direct relationship between previous lung diseases and lung cancer (27). In present study (6.8%) of the patients with past history of COPD, there were four patients diagnosed with NSCLC, two patients with adenocarcinoma and two patients with squamous cell carcinoma. A previous study showed that the positive history of COPD could be a risk group for the

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development of lung cancer, especially adenocarcinoma subtype (28, 29).

The majority of patients in our study were from Benghazi city, and this might be due to presence of an oncology department in this city or it could be related to the increased population of Benghazi, Moreover, the presence of Al Hawari Cement Factory in Benghazi, was considering as one of the major air pollution sources in the area throughout several years of production.

In current study, most of the patients were diagnosed in stage IV, a late stage where the cancer has already spread to distant organs, this is most probably due to delay presentation of patient and late diagnosis by physicians even with early presentation of patient (30).

A study in England by Kotecha J.et al referred the delay of presentation by patients to non-recognition of symptoms, anxiety and denial(30).

In Denmark, a study by Bjerager M et al referred the reasons for the delay in proper diagnosis of lung cancer in primary health care to using chest x-ray without suspicion of a cancer, symptoms not related to lungs, waiting of laboratory investigation and unclear of appointment of follow up (31). In 2022, many studies applying low dose CT have stated the ability to diagnose lung cancer early and a survival hope to those screened (32).

Conclusion

1.The recent study showed that bronchogenic carcinoma was a very common cancer in Benghazi, and the smoker male patients with a mean age of 63 years and 58 years for females.

2.NSCLC type of lung cancer was the most common type of lung cancer(71.4%) among different age group.

3.Adenocarcinoma subtype of NSCLC was the predominant type in this study, specifically in patients with no past medical history of respiratory diseases

4.Most of the patients presented with stage IV of the cancer which means that the cancer has already metastasized away from the lung.

Limitations

The large issue in this study was lack of some data from the patient's file in oncology department of Benghazi medical center.

Recommendations

1.It is important to increase the level of awareness in the society about the two most common causative factors related to lung cancer, smoking and inhalation of radon gas. The authorities have to sets a plan for measuring such radioactive natural gas in different areas of the country.

2.There is need to establish a high technical procedure for proper recording and good history taking for the cancer cases.

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Prevalence of Depression in Patients with Rheumatoid Arthritis attending Rheumatology clinic of Benghazi Medical Center

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Original Research Article

Abstract

Introduction: Depression is a common co-morbidity in Rheumatoid Arthritis (RA) patients, potentially affecting the severity of the disease.

Aim: The study aims to assess the prevalence of depression in Libyan patients with RA and to evaluate their depressive symptoms and depression scores.

Methods: This is a cross-sectional study conducted at the Rheumatology Clinic of Benghazi Medical Center. It includes RA patients attending the clinic over six months, using the Patient Health Questionnaire (PHQ-9) to assess depressive symptoms.

Results: The study analyzed 157 patients, aged 17 to 71 (mean age 42.9 years), predominantly female (female to male ratio of 12.1:1). Most patients had secondary or university education 74 patients (47.1%). Over half had no co-morbidities, and 87.3% were receiving RA treatment. A family history of RA was noted in 32.5% of patients. Depression scores revealed: Minimal depression in 12.7% (no treatment needed), Mild depression in 20.4% (treatment based on clinical judgment), Moderate depression in 29.3% (treatment based on clinical judgment). Moderately severe depression in 19.7% (treatment with antidepressants or therapy). Severe depression in 17.8% (treatment with antidepressants with or without therapy). The mean depression score was 12.3, with no significant associations found with age, sex, residence, disease duration, family history, or Body Mass Index (BMI).

Conclusion: In conclusion, RA patients exhibit a high prevalence of depression, which significantly impacts their quality of life and disease outcomes. The presence of co-morbidities further complicates management. Addressing the mental health of RA patients should be an integral part of their overall care plan.

Keywords: Prevalence of Depression, Rheumatoid Arthritis, Cross-sectional Study, Patient Health Questionnaire (PHQ-9).

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Introduction:

Rheumatoid arthritis (RA) is an autoimmune disease causing bilateral joint inflammation, leading to cartilage destruction and bone erosion. It affects about 5 in 1000 people, primarily impacting women and older adults (1). Symptoms include joint pain, stiffness, and swelling, alongside extra-articular manifestations like nodules and pulmonary disease (2). Although treatments exist, managing RA is challenging and often requires lifelong therapy, impacting physical and mental well-being, leading to fatigue and sleep issues (3). The burden of RA significantly affects quality of life and workplace productivity, with depression commonly associated with functional disability (4). Diagnosing RA typically involves patient symptoms, family history, imaging, and laboratory tests (5).

Depression is a prevalent comorbidity in RA, affecting 14% to 48% of patients (6), yet it often remains under diagnosed and untreated. The relationship between RA and depression is bidirectional: RA patients frequently experience depression, and those with depression are at higher risk of developing RA (7). Factors contributing to this link include overlapping symptoms, varying definitions of depression, and possible biological mechanisms involving inflammatory mediators (8).

Although commonly misdiagnosed, depression negatively impacts RA outcomes, including disease activity and quality of life (9). The debilitating nature of RA, along with chronic pain and fatigue, can exacerbate depressive symptoms. Biological theories suggest that cytokines may play a role in this connection, as depression often coexists with other autoimmune and chronic inflammatory conditions (10). Evidence indicates that inflammatory cytokines may contribute to depression and could be targeted therapeutically (11). The objective of this study was to measure the prevalence and severity of depression in patients with rheumatoid arthritis attending the rheumatology clinic using the Patient Health Questionnaire (PHQ-9).

Methods:

The cross-sectional, descriptive study include 157 patients, aged 17 to 71 years who were diagnosed with RA as per the American College of Rheumatology (ACR) criteria of 2010 ACR/European League Against Rheumatism (EULAR) criteria, (12) and presenting for follow up visits to rheumatology clinic at Benghazi medical center over a period of 6 months. Electronic records were used to retrieve demographic data (age, sex, smoking status), RA clinical data (disease duration, patient assessment on Visual Analogue Score for pain(VAS), functional stage, drug history). On evaluation, patients were formally questioned regarding the dates of depression symptoms and diagnoses, as well as current and previous antidepressants by giving Self-assessment questioner to all patients. Patient Health Questionnaire (PHQ-9) (13) was used to assess the extent of depressive

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symptoms in RA patients. All data were analyzed using SPSS version 23 for windows. Descriptive statistics will be computed for all relevant data. Association between two variables will be tested using chi-square and t-test. All significance was reported at P<0.05. Data will be presented in tables and figures.

All patients gave consent at each visit regarding medical management and the use of medical data.

Depressive symptoms were assessed using the PHQ-9 tool, which has been validated for use in SA to identify comorbid depression in patients with chronic conditions. (14, 15) Depression was graded according to the PHQ-9 scores as follows: < 5 no depression; 5–10 mild depression; 11–14 moderate depression and >15 severe depression. All participants identified with symptomatic depression were referred to the psychiatric unit for further evaluation.

Results:

The study included 157 patients with rheumatoid arthritis, with age ranging from 17 to 71 years, the mean age of the study participants was 42.9 (±9.1). The vast majority were female, with 92.4% being female and only 7.6% male. The majority of patients were Libyan (93.6%), while the rest were non-Libyan (6.4%). Demographic and clinical characteristics represented in table. 1.

Table 1: Socio-demographic and clinical characteristics of 157 patients with rheumatoid arthritis.

Characteristics	Total number of patients	
	Number	Percentage (%)
Age category (years)		
<=20	1	0.6
21-30	14	9
31-40	55	35
41-50	59	37.6
51-60	23	14.6
>60	5	3.2
Gender:		
Female	145	92.4
Male	12	7.6
BMI categories (kg/m2):		
underweight	2	1.3
Normal	36	22.9
Overweight	74	47.1
Obese	45	28.7

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Marital status:		
Single	89	56.7
Married	50	31.8
Divorced	5	3.2
Widowed	13	8.3
Current smoking: (Male)		
Yes	5	41.7
No	7	58.3
Comorbidities:		
Yes	75	47.8
No	82	52.2

Regarding marital status, about half of the patients were single, comprising 56.7%, while 31.9% were married. Divorced and widowed patients together accounted for approximately 11.5%.

In terms of occupation, housewives constituted 43.9%, followed by teachers (26.1%), employees (15.9%), nurses (4.5%), and businessmen (4.5%). Lawyers and doctors each represented 1.9%, while students accounted for 1.3% and cleaners for 0.6%.

The distribution of patients according to education level showed that the majority had a university education 47.1%, followed by secondary education 35.7%, Additionally, 7.0% had preparatory education, 1.9% had elementary education, and 8.3% were illiterate (Table 2).

Table 2: Distribution of patients according to level of education

Level of education	No.	%
Illiterate	13	8.3
Elementary	3	1.9
preparatory	11	7
Secondary	56	35.7
University	74	47.1
Total	157	100

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The mean duration of rheumatoid arthritis among patients was 3-4 years, with the majority 72.6% having a duration of 1-5 years. The maximum duration reported was 11-15 years for 7 patients (4.5%), while the shortest duration was one year.

Among all patients, 52.2% had no co-morbidities, Diabetic patients accounted for 17.2%, while 8.9% had both diabetes and hypertension. Additionally, 4.5% had systemic lupus erythematosus, and 5.7% had hypertension.

Regarding drug history, about 79 patients (50.3%) were on Methotrexate, followed by Plaquenil, used by 47 patients (36.0%). About 11 patients (7.9%) were on Hydroxychloroquine.

More than one half of patients 67.5% gave negative family history for RA, while 32.5% had a positive family history.

About 23.6% of patients complaining of hand swelling, and 11.8% reports low back pain and neck stiffness.

Out of all patients, 148 (94.3%) tested positive for rheumatoid factor, while 9 (5.7%) tested negative.

The mean body mass index (BMI) of all patients was 29.4 kg/m², with a standard deviation of 8.9 kg/m². Among the patients, 25 (28.7%) were classified as obese (BMI > 30 kg/m²), while (1.3%) were underweight (BMI < 18.5 kg/m²) (Fig 1).

Fig. 1: Distribution of patients according to body mass index

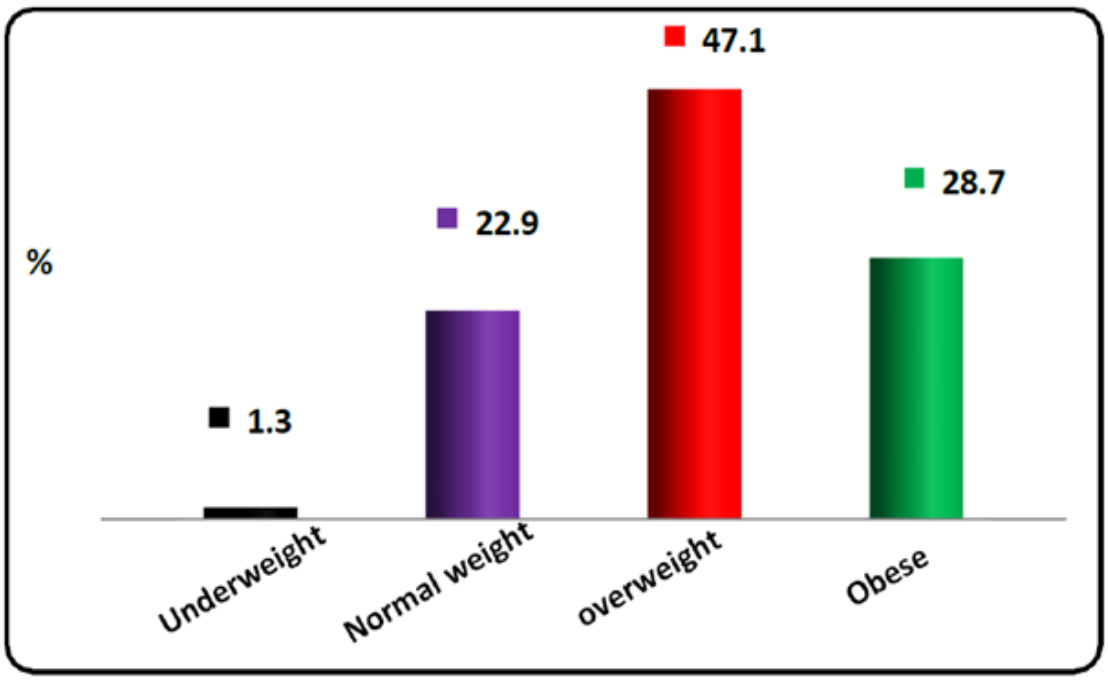

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Table 3 shows that the most frequently reported symptom among all patients was a lack of interest or pleasure in activities, with a mean score of 1.6.

Total depression scores indicated moderate depression (29.3), severe depression in 28 patients (17.8%), moderately severe depression in 31 patients (19.7%), and mild depression in 32 patients (20.4%), with a mean score of 12.3. Clinical judgment done by multidisciplinary team involved in the long-term care of RA patients includes rheumatologist, psychiatrist, and social workers.

Among all patients, severe depression was reported in 15 married individuals (16.9%), 10 single individuals (20%), 3 divorced individuals (60%), and 3 widowed individuals (23.1%). The distribution of patients by education level revealed that the majority of patients with moderate depression were of higher educational level (23 patients, 31.1%).

The distribution of patients according to disease duration revealed that about 28 patients (19.6%) had RA for more than one year. Regarding family history of RA, 27.4% of patients without family history experienced more severe depression. Among all patients, about 17 patients (23%) with depression were overweight.

Table 3: Scores of the indexes used in the study (PHQ-9) Patient

Depression Questionnaire	Mean	Std. Deviation	Minimum	Maximum
1. Little interest or pleasure in doing things	1.6	1.2	0	**3**
2. Felling down, depressed, or hopeless	1.5	1.2	0	**3**
3. Trouble falling or staying asleep, or sleeping too much	1.6	1.2	0	**3**
4. Felling tired or having little energy	2.2	1.1	0	**3**
5. Poor appetite or overeating	1.4	1.1	0	**3**
6. Feeling bad about yourself-or that you are a failure or have let yourself or your family down	1.2	1.1	0	**3**
7. Trouble concentrating on things, such as reading the newspaper or watching television.	1.3	1.2	0	**3**
8. Moving or speaking so slowly that other people could have noticed. Or the opposite –being restless that you have been moving around a lot more than usual	1.2	1.2	0	**3**
9. Thoughts that you would be better off dead, or of hurting yourself	0.5	0.98	0	**3**

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Table 4: Interpretation of depression total score

Total score	Depression Severity	No	%	Action
1 -4	Minimal depression (None)	20	12.7	No need for treatment
5-9	Mild depression	32	20.4	Use clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
10-14	Moderate depression	46	29.3	Use clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
15-19	Moderately severe depression	31	19.7	Treat using antidepressants, psychotherapy or a combination of treatment.
20- 27	Severe depression	28	17.8	Treat using antidepressants with or without psychotherapy
Total		157	100%	

Discussion:

This study found that the prevalence of moderate to severe depression was higher in patients with RA compared to mild-moderate depression. The prevalence of depression was higher in this study compared to other studies. In this study, pain was highly associated with depression, which is supported by findings on the impact of RA on daily life activities and the distress caused by pain, fatigue, and restrictions. The painful disease such as RA makes patients with depression suffer even more as their coping mechanisms become compromised by that depression. Unbearable pain leads them to negative thoughts such as death, which makes them lose their mental well-being. This highlights the importance of controlling pain in these patients. (16, 17, 18)

Patients with RA expressing an uncertain fate regarding the future can lead to the development of depression, anxiety, and helplessness. Taking the disease and medications makes them feel controlled by illness. According to the data, this situation is an important issue, especially in terms of reducing the low quality of life for patients with RA. They feel guilty towards themselves and the people around them because of the burden that they believe they are creating, which is also a significant factor that triggers depression. Unpleasant and unwanted memories related to the disease and treatment control the individual's life negatively. Mediating the nervous side effects of drugs and preventing the exacerbation of psychopathological severity in RA patients should provide a balance between their daily lives and reduce their depression, which should be the priority of healthcare in managing these patients. (19, 20, 21)

The study included 157 patients and revealed high prevalence of depressed mood among patients with RA. This could have

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been the reason for the low quality of life. Patients reported a significant impact of the disease on their quality of life. Moderate depression was present in 29.3% of RA patients, severe depression was found in 17.8% of patients. This is in accordance with a similar study which reported that the prevalence of depression in RA patients ranged from 19% to 62% (22).

It is necessary for the multidisciplinary team involved in the long-term care of RA patients to understand this grave patient experience. Every effort should be made to aim the multidisciplinary management of RA at the control of the psychiatric disorders that are likely to develop in many patients unless their psychological responses are specifically managed. The goal of treatment is not solely a medical one; it should encompass the re-establishment of an appropriate psychological response of adjustment to a chronic and disabling disease without additional unnecessary disability generated by psychiatric illness. (18, 23, 24)

Depressive symptoms should be sought by physicians while assessing RA patients in the clinic. If depression is found, treating the patient for depression will help in overall disease management. Severe functional impairment and the presence of depressive symptoms should be assessed by physicians while evaluating patients with RA. (25, 26, 27)

Few studies have been conducted in our setup to evaluate the prevalence of depression in patients with RA. The results from our study are in line with previous studies conducted in the western world where the prevalence of depression among patients with RA ranged from 18% to 23%. However, the prevalence of depression in patients with other chronic comorbidities like diabetes is less compared to RA. Studies done in Lahore and Karachi found that the prevalence of depression and anxiety among patients with RA was 39% and 41%, respectively, and about 34% had both anxiety and depression. (28, 29)

In a survey among three tertiary care hospitals in Sindh, the prevalence of anxiety and depression among 323 patients with rheumatoid arthritis visiting rheumatology clinics was 40.4% and 39.3%. A local study reported a prevalence of 61.5% of depression among patients with RA in Pakistan. A meta-analysis of emotional problems in RA patients concluded that there is no difference in prevalence and severity of anxiety between RA and controls, that depression prevalence is increased in RA patients, but severity scores show only little evidence of a difference. (30, 31, 32)

Conclusion:

In conclusion, RA patients exhibit a high prevalence of depression, which significantly impacts their quality of life and disease outcomes. The presence of co-morbidities further complicates management. Addressing the mental health of RA patients should be an integral part of their overall care plan.

Recommendation:

The goal of these recommendations is to

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provide a framework for implementing regular screening for symptoms and signs of depression in RA patients by multidisciplinary team involved in the long-term care of RA patients includes rheumatologist, psychiatrist, and social worker.

There is a lack of statistical information in the medical literature of this topic, so we recommend conducting further studies to explore the issue.

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Skin manifestation of diabetes at Benghazi Diabetic centre

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Original Research Article

Abstract

Background: Diabetes mellitus is more than just popular endocrine disturbance or malfunction; it is an extending disorder which has a burden on different age groups and socioeconomic populations. The persistent hyperglycaemia contributes to the onset of cutaneous manifestations in diabetes mellitus. Skin signs of this endocrine disease generally appear after the primary disease has developed but may appear coincidentally with its onset, or even precede diabetes by many years. Observing the skin signs of diabetes is crucially important as it can add to adequate disease control. An active workup for many initial changes, such as xerosis, hyperkeratosis or the various skin infections and actively early managing them could be greatly valuable to reduce dangerous untreatable late side effects of diabetes.

In this study we aimed to study the pattern of different cutaneous manifestations associated with diabetes mellitus.

Objective: To evaluate the most common skin manifestation of diabetes, and their relations to age, sex, diabetes duration, fasting blood glucose and glycosylated haemoglobin and making comparisons with other studies.

Methods: This study was conducted between April 2023 and June 2023, and this study included cases attending Benghazi Diabetic Centre and the Diabetic clinic of Benghazi Medical Centre.

Results: Fungal infections were the most common skin manifestations, Females outnumber the males, values of two types of diabetes were similar, the peak of age ranged between (44-53), and the glycaemic profile was unsatisfactory.

Conclusion: Fungal infections are the most common skin manifestation in this study and they are more related to females than males with accelerated sugar levels.

Keywords: Diabetes, Hyperglycaemia, Infection, Manifestations, Skin.

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1. Introduction

Diabetes mellitus (DM) is most likely one of the oldest disorders known to human race. It was first mentioned in the Egyptian manuscript about 3000 years ago. a persistent metabolic illness, the prevalence of which has been rising globally. Due to this trend, it is quickly spreading to other parts of the world and is predicted to affect twice as many people in the next ten years as a result of an aging population. [1]

It is a disease with a potential to attack the majority of the body parts. Changes occurring in the skin, as it's affected by hyperglycaemia like any other internal organs. A lot of skin disorders show high prevalence and intensity in DM, the main chemical circumstances leading to this are yet to be interpreted. And based onW the literature, 30% of the diabetic patients sooner or later will have skin manifestations or signs during the natural course of this chronic illness. The skin is considered to be transient storage for any excess blood sugar, this fundamental finding explains the tendency of the cutaneous tissue to develop itching and inhabit the various infections. [2]

Diabetes harm the skin via more than one mechanism, the hyperglycaemia per se and AGEs are the most prominent factors involved in the whole process.

The most significant harm done to the skin is the modification of collagen fibres brought on by Maillard reactions. The Schiff base reaction is the first step in this process, where an amino acid-derived amine group is condensed into the carbonyl group of a reduced sugar. This base then goes through structural changes to produce a more stable product, known as the initial product of the reaction of Maillard and Amadori products. These substances could interact with amino acids irreversibly and transform into advanced glycation end products (AGEs).[3]

In general words reaching pathologically abnormal levels of glycaemia intensely disturb skin homeostasis by inhibiting keratinocyte proliferation and migration, protein creation, promoting endothelial cell apoptosis, lowering nitric oxide synthesis and impairing phagocytosis and chemotaxis from biological active cells.[2]

In addition to the high endogenous level of AGEs due to the hyperglycaemia in diabetic patients, the cutaneous tissue of the diabetic individuals could contain damaged skin barrier because of their dysfunctional metabolism, that ultimately will lead to decline in the hydration of the stratum corneum and accelerating trans epidermal water loss. [3] There are various ways that the stratum corneum can become dehydrated, including a reduction in aquaporin 3 and a decrease in keratinocyte growth, which is linked to the dry skin seen in diabetics. [4] the aftermath increased skin surface pH, which induce and worsen cutaneous inflammation. [3]

Skin signs or manifestations in diabetes are mainly classified into four groups of potential causes, this classification aimed to facilitate the management of the outcomes.

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1. Skin lesions with strong to weak association with diabetes (Necrobiosis lipoidica: inflammatory granulomatous dermatosis with collagen degeneration and vascular involvement. Diabetic dermopathy: well demarcated hyperpigmented atrophic plaques on the anterior surface of the legs, diabetic bullae, yellow skin, eruptive xanthomas, perforating disorders, Acanthosis nigricans: more common in insulin-independent diabetes presents clinically with hyperpigmented verrucous linear plaques, found mainly in skin folds, Oral leucoplakia: thick, white patches on the inside surfaces of the mouth, Lichen planus: an inflammatory psychosomatic disorder, affecting skin and mucous membranes.)

2.Infections (Bacterial: Erysipelas, Cellulitis, Necrotic fasciitis, Fournier gangrene, Staphylococcal folliculitis
Furunculosis, Carbunculosis, Erythrasma, External otitis, Fungal: Yeast infections, Dermatophytid infections and systemic mycotic infections, viral: Herpes simplex and Herpes zoster).

3. Skin signs due to diabetes complications: (microangiopathy, macroangiopathy, neuropathy).

4. Skin reactions to the therapy itself, which includes (Sulphonylureas or insulin) [2]

Xerosis, callus, and fissures are examples of early-stage diabetic skin conditions that are typically disregarded and underdiagnosed. Those disorders can worsen clinically and progress to foot neuropathy, ulcers, and perhaps amputation if they are not diagnosed and treated. Several dermatological disorders can result from DM-induced neuropathy that affects sensory, motor, and autonomic pathways. [2]

In this current study we aimed to observe the pattern of various cutaneous manifestations associated with diabetes mellitus in a group of patients visiting the endocrine clinics for regular follow up of Diabetes.

2. Materials and Methods

The study was conducted in Benghazi Diabetic Centre and the diabetic clinic of Benghazi Medical Centre, City of Benghazi – Libya. The study period was between April 2023 and June 2023. Information regarding cases were retrospectively gathered from the patents directly with respect to privacy. A total number of 66 cases.

Demographic data were examined regarding the type of skin manifestation, then data analysed with the next consideration: age, sex, duration and type of diabetes, last records of fasting blood glucose and glycosylated haemoglobin.

Statistical analysis: The whole data were evaluated statistically by using Microsoft Excel which has also been applied along with Microsoft word to make graphs.

The clinical data so received were evaluated. A comparison with other similar studies was done.

3. Results

A total number of 66 cases included in the study, over period of two months. The most common skin manifestations observed is the fungal infections (27%), followed by

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Xerosis (17%) followed by Scleroderma (15%). (Figure 1).

In this current study female patients were 45 (68%), while males were 21(32%).

In This study, 35 cases were Type I Diabetes (53%), While 31 cases were Type II Diabetes (47%) (Figure 2), the peaks of incidence of the skin manifestation during the course of diabetes were between (9.6-17) years. (Figure 3). (Maximum age 90 years), (Minimum age 24years), Peaks of age between (44-53) years. (Figure 4).

In this current study (Maximum HbA1c:14), (Minimum HbA1c: 6). Most of the cases of which the HbA1c Value range between (6-10) (Figure 5). (Maximum FBS: 334), (Minimum FBS: 75). Peaks of value of fasting blood sugar ranged between (116-157) (Figure 6)

4. Discussion

In this study regarding skin manifestations of Diabetes mellitus, 66 cases of both genders, different ages were collected, their data arranged and analysed.

The most common skin manifestations found in this study fungal infections (27%), followed by Xerosis (17%) followed by Scleroderma (15%), the category of the others (which includes: skin rash, vitiligo, acne, psoriasis, skin tag, Xanthoma) and the Diabetic dermopathy shared the same results (11%), followed by acanthosis nigricans (7%) and lastly both the bacterial infections and the Diabetic bullae shared same percentage (6%). Those results strongly agree with the study conducted by (Roslind, et al. 2019) [5] where fungal infection was the most common finding. The fungal infection in this current study included (Tenia, Candidal intertrigo and Erythrasma)

In This current study female patients were more than the males, constituting 45 (68%), while males were 21(32%). This finding is in agreement with same cross-sectional study conducted in Karachi where the female gender outnumber the male according to (Niaz et al. 2016) [6].

In a study conducted in Kuwait by (Al-Mutairi et al. 2006) [7] Diabetic Patients Type I with skin manifestations were much less than Diabetic Patients Type 2 with skin manifestations and this disagree with this current study in which both types of diabetes have very close values, 35 cases were Type I Diabetes (53%), While 31 cases were Type II Diabetes (47%).

With respect to Disease duration through which skin manifestations appear differently, the peak of the disease duration was between (9.6-17), this almost agree with a study conducted in India by (Roslind, et al. 2019) where the majority of the patients had skin manifestation (10-14) after the onset of the disease.

Regarding the age group in the population of the study, in this current study (Maximum age 90 years), (Minimum age 24 years), Peaks of age between (44-53) years, followed by age between (64-73), this result totally in agreement with same study conducted in Kolhapur, India. (Phulari and

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Kaushik, 2018) [8].

Taking in consideration the glycaemic profile for the skin manifestation, the study conducted by (Niaz et al. 2016) showed that the level of glycosylated haemoglobin range (6-13) and this is higher than the finding in this current study, (Maximum HbA1c:14) (Only one case), (Minimum HbA1c: 6). Most of the cases of which the HbA1c Value range between (6-10). While the results of range of fasting blood sugar were almost in agreement, in both studies, the majority of the values showed unsatisfactory glycaemic control. (Maximum FBS: 334), (Minimum FBS: 75). Peaks of value of fasting blood sugar ranged between (117-157).

It is crucial for most of the dermatological conditions to receive the appropriate treatment and care, still, a key rule of success is to improve the blood sugar level, rising the patients' education and imposing positive lifestyle changes, these essentials can ultimately improve the quality of life of diabetic patients. (Dourmishev L, Pozharashka 2019) [9].

5. Conclusion

This study included 66 diabetic cases, all with skin manifestations. We concluded that the most common skin manifestation in this study the fungal infection (27%) followed by Xerosis (17%) and the least were both bacterial infections and the Diabetic bullae with (5%).

We conclude that the female gender (68%) is more affected as it constitutes higher percentage than the male gender (32%).

We observed that during the course of diabetes mellitus regardless the type, the skin manifestations are mostly found after (10-14) years of the onset of the disease.

Revising the glycaemic profile, we concluded that the majority of the cases with skin manifestation showed unsatisfactory fasting blood sugar range (117-157) and glycosylated haemoglobin range (6-10)

In summary dermatological manifestations are a highly prevalent complications of diabetes mellitus which affect quality of life and adds to the heavy burden of therapeutic costs. It is found in both types of diabetes and increasing duration of diabetes increases the possibility of skin involvement.

6. Abbreviations and Acronyms

AGEs: Advanced glycation end products
DM: Diabetes mellitus
FBS: Fasting blood sugar
HbA1c: Haemoglobin A1c

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8.Figures

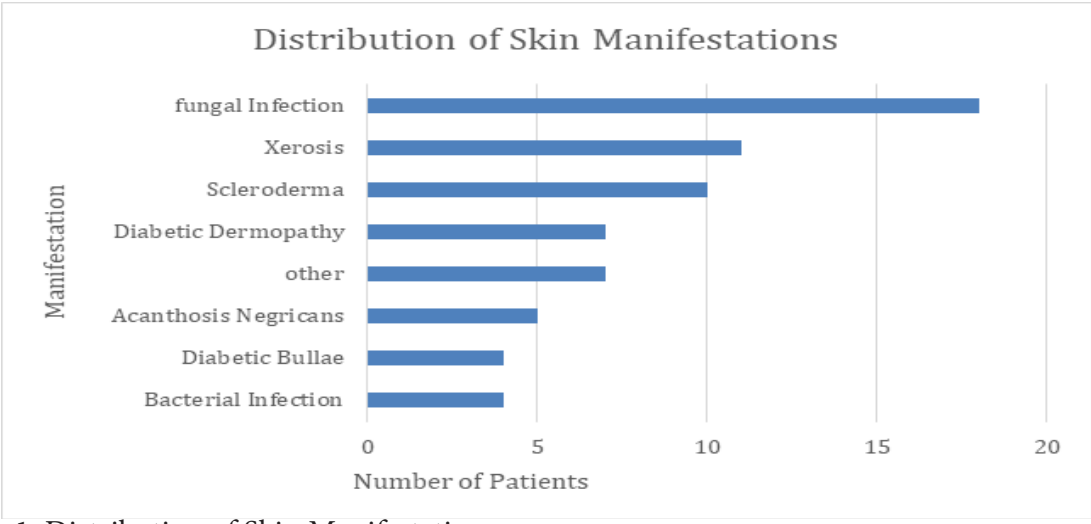

Fig. 1: Distribution of Skin Manifestations

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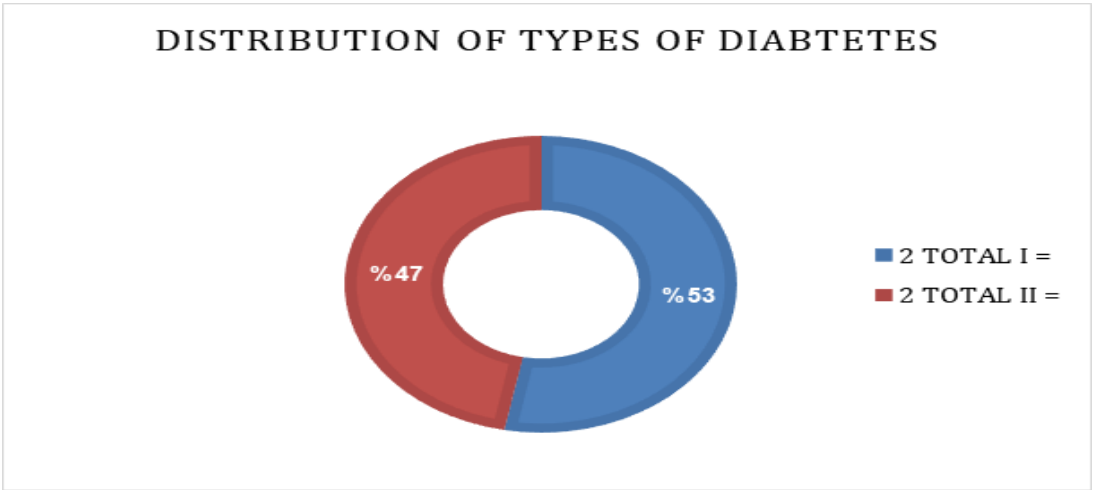

Figure 2: Distribution of types of diabetes

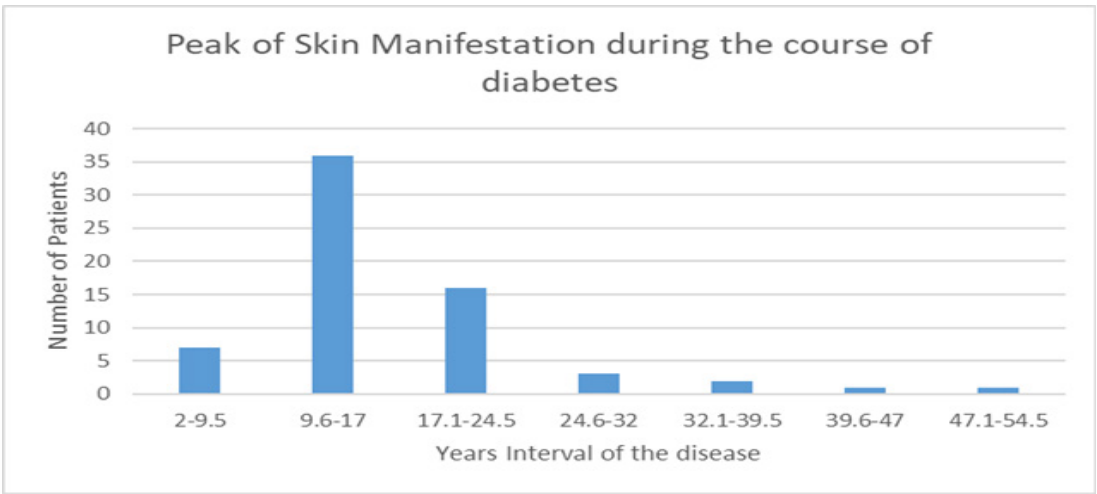

Figure 3. Peaks of Incidence of Skin Manifestation during course of the disease

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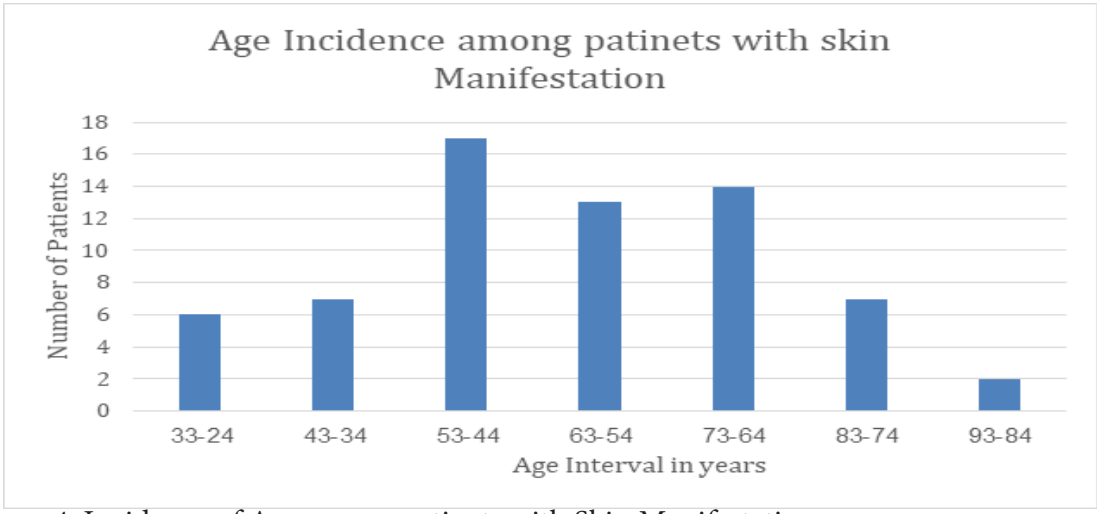

Figure 4. Incidence of Age among patients with Skin Manifestation

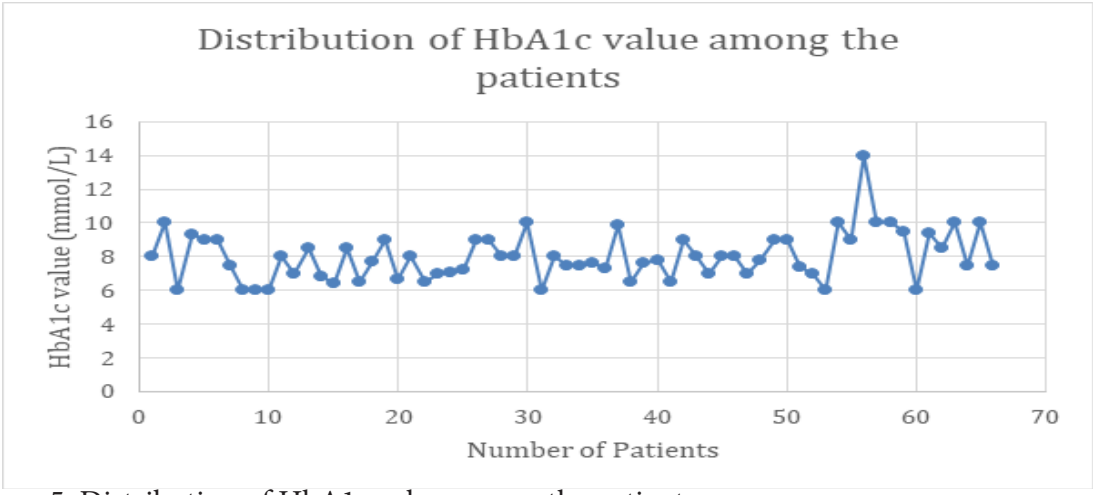

Figure 5. Distribution of HbA1c value among the patients

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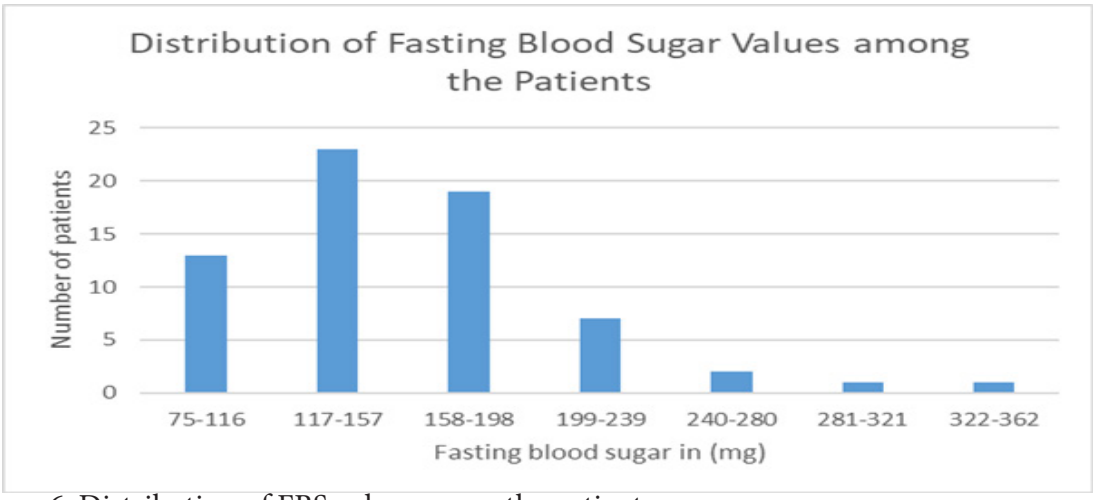

Figure 6. Distribution of FBS value among the patients

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Implementation of Curriculum Strategies For Medical Education

Emeritus Prof. Ibrahim Betelmal[1], Dr. Suad Alnasfi[2]

Editor Letter

1.Advisor to the vice president of the University of Benghazi for medical Faculties, Former WHO Official.
2.Department of Family and Community Medicine, University of Benghazi- Faculty of Medicine.

Respected Sir/Madam:

In a world where medical knowledge is expanding, how we teach physicians is as important as what we teach. An integrated curriculum can bridge basic sciences and clinical practice and help develop soft skills such as critical thinking. By integrating disciplines, we prepare future doctors to address the challenges of modern healthcare systems.

Traditional medical education dates back to the early practices of apprenticeship models in the 18th and 19th centuries, where students learned by observing physicians. Over time, formalized medical schools emerged, notably influenced by European institutions. By the early 20th century, the Flexner Report (1910) significantly reshaped medical education in North America, advocating for a science-based curriculum. This model became the gold standard, dividing medical education into two distinct phases:

1.Pre-clinical Phase – Focus on basic sciences (anatomy, physiology, biochemistry).
2.Clinical Phase – Hospital-based rotations emphasizing practical skills.

While the traditional approach contributed to standardized medical training, it revealed several shortcomings over time:

1.Fragmentation of Knowledge: Basic sciences were taught in isolation from clinical practice, making it difficult for students to apply theoretical knowledge in real-world settings. This compartmentalization often led to a disconnect between classroom learning and patient care.

2.Delayed Patient Interaction: Clinical exposure was postponed for years, limiting early hands-on experience and reducing opportunities to develop essential communication and diagnostic skills

3.Passive Learning: The reliance on lectures and rote memorization led to passive learning, which hindered critical thinking and problem-solving skills.Problem-based learning (PBL) emerged in the late 1960s at McMaster University (Canada) as a response to the rigid and compartmentalized traditional medical curriculum. Educators sought to create a more dynamic, student-centered approach that emphasized critical thinking and real-world application. Students work in small groups to solve

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clinical problems or cases. Facilitators guide discussions, but students drive the learning process by identifying knowledge gaps and researching solutions independently. Challenges associated with Problem-Based Learning (PBL) include:

1.Time-Consuming: PBL frequently necessitates substantial time for both preparation and group discussions, potentially restricting the depth of material covered

2.Variable Faculty Expertise: Facilitators must possess the ability to guide discussions without dominating them, which can be challenging without adequate training.

3.Assessment Difficulties: Evaluating student performance in group settings can be subjective and inconsistent.

4.Resource Intensive: PBL requires smaller class sizes, additional facilitators, and dedicated resources, which can strain institutional budgets.

Case-based learning (CBL) serves as a bridge between traditional and problem-based learning models, emphasizing structured clinical cases to contextualize theoretical knowledge. It gained prominence in the 1990s as an enhancement to problem-based learning (PBL). Students analyze real or simulated clinical cases to apply theoretical concepts. Faculty facilitate discussions, guiding students as they progressively explore more complex cases as their knowledge expands.

Challenges to CBL:

1.Limited Scope: Cases may not cover all aspects of a subject, leaving knowledge gaps.

2.Facilitator-Dependent: The quality of learning heavily relies on the expertise and engagement of the faculty.

3.Engagement Variability: Some students may passively participate, limiting the full benefits of collaborative case exploration.

4.Difficulty Scaling: Large student cohorts can make case discussions less interactive and personal.

Team-based learning (TBL) originated in business education during the 1970s and subsequently gained adoption in medical education as a means of fostering collaboration and accountability. It experienced significant growth in the early 2000s as a scalable and cost-effective alternative to Problem-Based Learning (PBL). In TBL, students are divided into teams and engage in collaborative problem-solving or case analysis. Sessions typically encompass pre-class preparation, individual and team quizzes, and group applications of acquired knowledge.

Challenges to TBL include:

1.Dominance of Stronger Students: More vocal or knowledgeable students may dominate discussions, limiting engagement from quieter members.

2.Pre-Class Workload:TBL requires significant preparatory work, and unprepared students can hinder team progress.

3.Resistance to Group Work: Some students prefer independent learning and may find teamwork frustrating or inefficient.

4.Assessment Challenges: Balancing indi-

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vidual and group performance assessments can be complex and sometimes perceived as unfair.

Integrated Learning began to gain prominence in medical education in the late 20th century as educators recognized the limitations of traditional teaching. This approach aims to connect basic sciences and clinical practice. Integrated learning is categorized into three types:

1-Horizontal Integration: Combines subjects within the same phase of education, such as anatomy and pathology in preclinical years.

2- Vertical Integration: Bridges preclinical and clinical phases, allowing students to apply basic science knowledge during clinical rotations.

3- Spiral Integration: Revisits and reinforces concepts at increasing levels of complexity throughout the curriculum, ensuring deeper learning over time.

The number and structure of modules in medical education vary depending on the institution, curriculum design, and their specific approach. However, most medical schools organize their programs into 8 to 12 major modules over preclinical and clinical years. These modules often follow an organ-system or thematic approach. Organ-system-based modules include the Cardiovascular System, Respiratory System, etc. Life-stage modules include Embryology, Pediatrics, and Geriatrics.

Challenges in Implementing Integrated Learning:

Integrated learning, which blends disciplines and connects theoretical knowledge with practical application, holds significant potential for enhancing educational outcomes. Research supports its effectiveness in fostering critical thinking and improving retention (Harden, 2000; Prince, 2004). However, its implementation poses several challenges that must be carefully addressed to ensure success. Key factors include faculty development, curriculum redesign, and resource allocation.

1.Faculty Development:

One of the primary challenges lies in preparing faculty to adopt integrated learning methodologies. Many educators are specialists in their respective fields, and transitioning to an interdisciplinary teaching model may require extensive professional development. Faculty must not only broaden their expertise but also collaborate across departments, which can be time-consuming and demanding. Additionally, there may be resistance to change, as some faculty members might prefer traditional teaching approaches (Cannon & Newble, 2000).

Solutions and Recommendations:

1.Provide regular workshops and training programs to enhance interdisciplinary teaching skills.

2.Establish mentorship programs where experienced faculty in integrated learning mentor others.

3.Encourage faculty exchange programs or collaborative teaching assignments across departments.

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4.Create incentives for faculty to participate in curriculum innovation and integrated course design.

2.Curriculum Redesign:

Integrated learning necessitates significant changes to existing curricula. Designing courses that blend multiple subjects while maintaining academic rigor and coherence is complex. Institutions must ensure that learning objectives from various disciplines align and complement each other. This often involves restructuring course sequences, introducing new assessment methods, and creating interdisciplinary capstone projects (Cooke, Irby, & O'Brien, 2010). Achieving such alignment requires continuous dialogue and cooperation among faculty from different departments, which can be challenging to coordinate.

Solutions and Recommendations:

1.Form interdisciplinary curriculum committees to oversee course design and ensure coherence.

2.Pilot integrated learning modules before full-scale implementation to gather feedback and refine the approach.

3.Develop thematic, case-based, or project-based courses that naturally integrate multiple disciplines.

4.Utilize technology to create virtual learning environments that support cross-disciplinary collaboration.

Examples of Successful Models: Several medical schools have successfully implemented integrated learning models. For example:

1.Harvard Medical School employs a Pathways curriculum that integrates basic science with clinical experience early in the program. This approach helps students apply foundational knowledge in real-world settings from the outset (Tosteson, Adelstein, & Carver, 1994).

2.Duke University School of Medicine compresses the traditional pre-clinical curriculum into one year, allowing students to engage in research and advanced clinical experiences earlier (Bridges et al., 2011).

3.McMaster University's Michael G. DeGroote School of Medicine uses problem-based learning (PBL), where students work collaboratively on clinical cases from day one, fostering an integrated and practical approach to medical education (Neville, Norman, & Whitehead, 2011).

4.University of California, San Francisco (UCSF) follows the Bridges Curriculum, which emphasizes the continuous integration of scientific knowledge with clinical practice and interprofessional collaboration (Wartman, 2015).

3. Resource Allocation:

Implementing integrated learning often requires substantial financial and administrative resources. Institutions may need to invest in new technology, learning spaces, and teaching materials that support intordisciplinary approaches. Furthermore, additional staff or coordinators may be necessary to facilitate cross-departmental initiatives. Without adequate funding and institutional support, the sustainability of

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integrated learning programs may be jeopardized (Gibbs, 2010).

Solutions and Recommendations:

1.Seek external funding through grants and partnerships with industry and government bodies.

2.Allocate dedicated budget lines for curriculum development and interdisciplinary projects.

3.Repurpose existing resources and spaces to foster collaborative learning environments.

4.Develop cost-effective digital tools and platforms that support integrated learning.

4. Student Adaptation and Engagement:

While integrated learning can be enriching, it may also pose difficulties for students accustomed to compartmentalized education. The shift to interconnected learning models may initially be confusing or overwhelming. Institutions must provide clear guidance and support to help students navigate integrated curricula. Ensuring that students appreciate the relevance and applicability of integrated learning to real-world scenarios is essential for maintaining engagement (Schmidt, 1998).

Solutions and Recommendations:

1.Implement orientation sessions to introduce students to the principles and benefits of integrated learning.

2.Develop student support services, such as tutoring and advising, focused on interdisciplinary education.

3.Encourage peer collaboration and group projects to build comfort with cross-disciplinary work

4.Highlight successful alumni who have benefited from integrated learning models.

5. Assessment and Evaluation:

Evaluating student performance in integrated learning environments can be challenging. Traditional grading methods may not effectively capture interdisciplinary competencies or collaborative skills. Institutions must develop comprehensive assessment frameworks that account for teamwork, critical thinking, and the ability to synthesize knowledge from multiple disciplines. This may include project-based assessments, portfolios, peer evaluations, and reflective writing assignments. Rubrics that clearly define the criteria for interdisciplinary understanding and problem-solving can help provide more accurate evaluations (Harden & Gleeson, 1979). Additionally, continuous feedback loops, where students receive regular input on their progress, foster deeper learning and allow for ongoing improvement.

Solutions and Recommendations:

1.Develop new grading rubrics that emphasize interdisciplinary skills, problem-solving, and collaboration.

2.Incorporate formative assessments, such as reflective journals or group presentations, into the curriculum.

3.Use technology to track and evaluate student progress across multiple subjects.

4.Implement 360-degree assessments where feedback is gathered from peers, instructors, and self-reflection.

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Conclusion:

Despite these challenges, the benefits of integrated learning—including enhanced critical thinking, problem-solving abilities, and real-world application of knowledge—make it a valuable educational model. By investing in faculty development, thoughtfully redesigning curricula, and ensuring proper resource allocation, institutions can overcome barriers and successfully implement integrated learning programs.

It's time for medical education to move away from rigid, compartmentalized approaches and adopt dynamic strategies that reflect the interconnected nature of medicine. Our healthcare systems depend on well-rounded physicians who are equipped with not only medical knowledge but also the ability to apply it effectively in diverse scenarios.

Sincerely,

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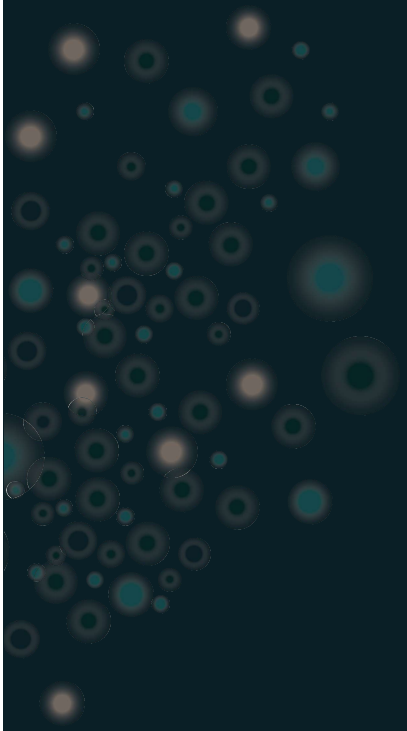

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