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Contents

Volume 22 Number 4

October - December 2022

	<u>Page No.</u>
1. A Comparison Between Caudal Epidural Analgesia and Paracetamol Suppository in Relieving Pain after Inguinal Hernia Repair in Pediatric Age Group <i>Abdulsamad Talal Kamil, Faez Ahmed Mahdi</i>	1
2. Homicidal Trends in Tribes of Bastar <i>Ashesh Gunwantrao Wankhede, Himanshu Sharma</i>	8
3. Procedure to Proceed Under the Provision of Section 161 CrPC <i>K.S. Arun Prakash, K. Thangaraj, O. Gambhir Singh</i>	14
4. The effect of herbal treatment of <i>Hyphaene Thebaica</i> (Doum) and <i>Nelumbo Nucifera</i> (Lotus) on Induced Hyperlipidemia and Hypertension in Male Wistar Albino Rats <i>Elmahdy M.F, Adris M.A, O. Belih S.S</i>	18
5. A Acute Appendicitis Induced by Traditional Iraqi Grilled Fish Bone (Masqouf) <i>Jaleel Hussien Al-obaidi, Karar Jabier Al-Shamari</i>	26
6. Gross examination and Toxicological Analysis of Gastrointestinal Tract for Dichlorvos Poisoning Caused by Nuvan Insecticide During Post-Mortem Examination: A Case Series <i>Jyotsnesh Chauhan, Ankit Kumar, Raviprakash Meshram, Binaya Kumar Bastia, Babulal Chaudhary</i>	29
7. Knowledge, Attitude of Mothers towards Infant Oral Healthcare in Baghdad City/ Al-Karkh <i>Maysam Sabah Kafi, Ban Juma Abed</i>	35
8. Association Between Ligature Material, Ligature Mark and Survival Period in Suicidal Hanging Victims: An Autopsy-Based Study <i>S. Harish, K Sasikala, K.S. Meena, A. Sarath</i>	42
9. Medical Ethics: From the eyes of Undergraduate Medical students, a Study Conducted in Vadodara <i>Sefaliben Patel, Reekee Patel, Dushyant kumar Barot</i>	46
10. Strategies in Treating Pancreatic Pseudocyst <i>Sinan Shawkat Hamid, Talib A. Majeed, Bashar A Abdulhassan</i>	50
11. A Retrospective Cross Sectional Study of Deaths Due to Hanging in Bilaspur Region of Chhattisgarh <i>Thakur Simant S, Gonnade Ulhas, Kanwar Hemant K, Kumar Gyanendra Kumar Piyush</i>	58
12. Green-Blue Discolouration of Brain at Autopsy: A Case Report <i>Saritha S R, Greeshma C K, Sreedevi C S</i>	63
13. Effect of COVID-19 on Psychological State of Elderly Patient at Jazan Community <i>Amira Refaat Said</i>	67

A Comparison Between Caudal Epidural Analgesia and Paracetamol Suppository in Relieving Pain after Inguinal Hernia Repair in Pediatric Age Group

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Abstract

Background: the control of postoperative pain is important in children, and poor pain control leads to organ dysfunction and behavioral problem.

Aim of study: we compare the analgesic effect of bupivacaine by caudal block root and acetaminophen suppository on postoperative pain in pediatric inguinal hernial repair surgery.

Patient and Methods: A prospective, randomized, controlled trial of 40 children, aged between (1-7 years), ASA grade I-II, scheduled for elective day case unilateral inguinal surgery. For all the patients included in this study, a standardized controlled anesthetic protocol was used. Preoperatively the patients were randomized into two groups according to the operation waiting lists. group 1 included (18) patients who received single - shot caudal block with (1ml/kg) of 25% bupivacaine preoperatively after induction of anesthesia by the anesthetist, group 2 included (22) patients who received (15-20 mg/kg) acetaminophen suppository.

Results: The number of patients (who had first three hours free of pain); was significantly higher in the Caudal group than those of the other group. Patients of the Caudal group; needed significantly a longer duration of time for the first analgesic drug. Patients of the Caudal group; had significantly a lower (Face, Legs, Activity, Cry, Consolability scale) in (1/2, 1, and 2 hours) time intervals of the study.

Conclusion: Caudal anesthesia with bupivacaine has better painless period postoperatively.

Keywords: Bupivacaine, Anesthesia, Caudal, Analgesia, Acetaminophen Suppository.

Introduction

The inguinoscrotal region is the most common site for surgical conditions in childhood⁽¹⁾. Children

suffer from postoperative pain at least to the same extent as their adult counterparts, yet they often receive less analgesia^(2,3).

Pain may trigger biochemical and physiologic stress responses and leads to impairments in pulmonary, cardiovascular, neuroendocrinal, gastrointestinal, immunological, and metabolic function even in children and newborns⁽⁴⁾. Optimal postoperative pain relief minimizes the metabolic rate for oxygen, reduces cardiorespiratory demands, promotes early ambulation, and speeds recovery. In addition, postoperative emotional disturbance is reduced if pain is well controlled⁽⁵⁾.

In pediatrics, acute postoperative pain is commonly treated with simple analgesics that often are not very effective and frequently are used at doses lower than would be optimal⁽⁴⁾. Effective pain therapies to block or modify the physiologic responses to pain and stress have become an essential

component of modern pediatric anesthesia and surgical practice⁽⁴⁾. Pain is a complex interaction that involves sensory, emotional and behavioural factors, and so its definition and treatment must include all of these aspects⁽⁶⁾.

Pain assessment tools can be categorized into five broad categories:

- self-report (using diagrams or pictures).
- Observational (behavioral)
- Physiologic (physiological parameters.)
- neurophysiologic
- hormonal-metabolic (changes in stress hormones such as epinephrine, nor epinephrine, or cortisol)^(7,8).

Table 1: (Faces, Legs, Activity, Cry, Consolability (FLACC) scale) ^(5,9,10)

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, or legs drawn up
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractable	Difficult to console or comfort

Management of postoperative PAIN:

1. Systemic Analgesic Drugs
2. Inhalational analgesia⁽¹¹⁾.
3. Regional Analgesia for Postoperative Pain^(5,12).
4. Local nerve blocks.^(6,12,13,14)
5. Local Infiltration^(15,16,17).
6. Regional blocks(spinal, epidural(caudal)):

Caudal Block

The caudal block is very useful in infants and children; it provides good postoperative analgesia after abdominal, lower limb, or perineal surgery⁽⁵⁾. Caudal route can be used as a single-shot access point for postoperative analgesia during sub-umbilical surgery in children. Dose: 0.5-1.0mL/kg 0.25% bupivacaine depending on the height of the block required and on agent used. Epidural blockade is

accompanied by minimal changes in blood pressure or cardiac output in children <6 years^(5,12).

Procedure:

For postoperative analgesia, the block should be performed after general anesthesia has been induced but before the surgery commences. The child is placed in the lateral decubitus position with the knees and hips well flexed. The landmarks are then identified. The sacral hiatus is at the midpoint between the sacral cornua, which can be palpated ~5 cm above the tip of the coccyx^(5,18).

These lie at the apex of an inverted equilateral triangle, the base of which is a line drawn between the posterior superior iliac spines. The child is prepared and draped, and the operator wears sterile gloves and a mask. The skin over the sacral hiatus is nicked with an 18-gauge needle (to avoid tracking epidermal tissues into the caudal canal), after which an IV catheter (22 gauge for children <2 years, 20 gauge for those >2 years) is advanced cephalad at an angle of 45° to the skin with the bevel facing anteriorly.

A distinctive sudden "give" is felt as the needle passes through the sacrococcygeal ligament. At this point, the angle of the needle is reduced and the catheter is advanced off the needle into the caudal canal. The needle is then withdrawn, leaving the intravenous catheter in the caudal/epidural space. The catheter should be observed for passive reflux of blood or CSF. The local anesthetic is injected in incremental doses (there should be no resistance to injection; if there is resistance, then the catheter is either kinked or misplaced) while the electrocardiogram is observed. A finger should be placed over the sacrum to detect inadvertent subcutaneous injection. The use of ultrasound has been advocated by some to improve success rates⁽⁵⁾.

Bupivacaine:

Widely used for peripheral and epidural blocks, a long-acting local anesthetic, amide type, a mean duration of effect of 3–6 h can be assumed. It is characterized by a slower onset of effect and by a long duration of effect. It is indicated particularly for regional anesthesia in the surgical field, in postoperative analgesia, and in therapy for various pain conditions, it is suitable for infiltration anesthesia,

peripheral nerve block, ganglion block and plexus block, as well as all forms of neuraxial anesthesia. It has the disadvantage that overdosing or accidental intravascular injection may lead to severe myocardial depression that may be prolonged and difficult to reverse^(5,19). Other side effects of bupivacaine are allergic reaction, seizure (convulsions), nausea, vomiting, chills or shivering, headache and back pain⁽¹²⁾.

Patients and Methods

A prospective, randomized, controlled trial of 40 children, was conducted at Baghdad Teaching Hospital, Medical City, and Al-Kadhemia Teaching Hospital, Baghdad, Iraq, which started at 1st of January 2020 to 20th of September 2020. aged between (1-7 years), ASA grade I-II, scheduled for elective day case unilateral inguinal surgery.

After approval of the scientific council of the Iraqi board of medical specializations, the study was performed after obtaining a written informed consent from the participants' parents. Age, gender, weight, anesthesia and surgery periods, severity of pain for the patients were recorded in a special data form.

Exclusion criteria were:

1. parent refusal.
2. skin infection at site of puncture.
3. anatomical malformation at site of puncture.
4. hypersensitivity to local anesthetics or paracetamol.
5. history of seizures.
6. neuromuscular or neurological disorders.
7. age < 1 year and > 7 years.

For all the patients included in this study, after securing an intravenous access, a standardized controlled anesthetic protocol was used, induction with Ketamine (1mg/kg), Propofol (1.5-2mg/kg), rocuronium (0.6mg/kg), and maintenance with sevoflurane (2-2.5%) in O₂ or isoflurane (1.2-1.5%) in O₂. Laryngeal mask airway was applied appropriately to their age.

Anesthetic management consisted of positive pressure ventilation, anesthesia was maintained with a titrated dose of inhalational anesthetics in 100%

Oxygen and iv bolus of rocuronium was repeated intermittently to maintain muscle relaxation.

Preoperatively the patients were randomized into two groups according to the operation waiting lists:

For group 1:- (18 patients)

The child placed in the lateral decubitus position and after identifying the sacral cornua and hiatus 23G needle is inserted into the sacral epidural space and by loss of resistance technique with saline, children received bupivacaine 0.25% (1ml/kg).

For group 2:- (22 patients)

Paracetamol suppository was given to the patients in a dose (15-20mg/kg) after induction of anesthesia.

At the end of the surgery, inhalational anesthetic was discontinued and residual neuromuscular block was antagonized by a combination of neostigmine 0.05 mg/ kg and atropine 0.02 mg/kg.

Postoperative the pain was measured by using FLACC scale at 30 minutes after discharge from the theater and then every hour during the next 3 hours of postoperative period by senior house officer.

The FLACC scale is scored in a range of 0-10, with 0 representing no pain, relaxed and comfortable,

1-3 mild discomfort, 4-6 moderate pain, 7-10 severe discomfort or pain. All the patients were observed in the surgical ward for development of any adverse effects or complications.

The patient considered for home discharge when:-

1. conscious.
2. vitally stable.
3. tolerating oral intake.
4. Absence of vomiting and other side effect.

Twenty –four hours after surgery, reports on delayed side-effects and demands for rescue paracetamol suppository and time of first urination and walking were gathered.

Statistical analysis:

Data were first entered in an excel file, transported later into statistical SPSS –software (package for social sciences file version 24) (SPSS v24) for data analysis. Continuous variables presented as means and discrete variables presented as numbers and percentages.

Chi-square test for independence used to test the significance of association between discrete variables. ANOVA test used to test the significance of difference in means between independent samples. Level of significance was set at P value equal or less than 0.05.

Results

Table 2: comparison between the two study groups in no. of patients who had three hours free of pain.

Variable		Group		p-value
		Caudal	P.sup.	
Pain free for the first three hours	Yes [No.] (%)	8 (44.4%)	2 (9.1%)	0.013
	No [No.] (%)	10 (55.6%)	20 (90.9%)	

The number of patients (who had first three hours free of pain); was significantly higher in the Caudal group than those of the other group.

Table 3: Comparison between the two study groups in time for the first analgesic, and time for the first walking.

Variable	Group	Mean	S. D.	p-value
Time for the first analgesic (hours)	Caudal	8.75	1.69	0.003
	P.sup.	7	1.71	
Time for the first walking (hours)	Caudal	11.22	5.46	0.096
	P.sup.	8.61	4.2	

Patients of the Caudal group; needed significantly non-significantly longer duration for the first walking, a longer duration of time for the first analgesic, and

Table 4: comparison between the two study groups in FLACC score in different time intervals of the study.

Time intervals	Group	Mean Score	S. D.	p-value
1/2 hour FLACC scale	Caudal	0.66	1.41	0.0001
	P. supp.	5.72	2.79	
1 hour FLACC scale	Caudal	1.11	1.87	0.001
	P. supp.	4.59	2.26	
2 hours FLACC scale	Caudal	0.72	0.95	0.025
	P. supp.	1.54	1.22	
3 hours FLACC scale	Caudal	0.55	0.78	0.598
	P. supp.	0.68	0.71	

Patients of the Caudal group; had significantly intervals of the study, and non-significantly lower a lower FLACC score in (1/2, 1, and 2 hours) time score in 3 hrs. time interval.

Table 5: comparison in general characteristics between the two study groups.

Group	N	Mean age (years)	S. D.	Std. Error Mean	p-value
Caudal	18	3.88	2.04	0.48	0.08
Paracetamol supp.	22	2.81	1.72	0.36	
Caudal	Gender	Male No. (%)	12(66.7%)		0.464
		Female No. (%)	6(33.3%)		
Paracetamol supp.		Male No. (%)	18(81.8%)		
		Female No. (%)	4(18.2%)		

Non-significant differences were found in comparing the two groups in age, and gender distribution.

Table 6: Comparison in operative details between the two study groups.

Variable	Group	Mean	S. D.	p-value
Duration of anesthesia (min.)	Caudal	37.77	8.61	0.869
	P. supp.	38.18	6.82	
Duration of surgery (min.)	Caudal	27.22	8.44	0.837
	P. supp.	27.72	7.02	

Patients who received paracetamol suppositories; had non-significantly a longer duration of anesthesia, and a longer duration of surgery.

Discussion

The inguinoscrotal region is the most common site for surgical conditions in childhood⁽¹⁾. effective pain therapies to block or modify the physiologic responses to pain and stress have become an

essential component of modern pediatric anesthesia and surgical practice⁽⁴⁾. Acute postoperative pain is commonly treated with simple analgesics that often are ineffective and frequently used at doses lower than would be optimal⁽⁴⁾. Systemic analgesics and regional anesthetic techniques with various efficacies have been used for pain relief after inguinal surgeries.

In our study the efficacy of caudal block with bupivacaine and paracetamol suppository was

compared in cases of inguinal hernia cases. Because the total spinal blockade sometimes having potential serious complication, awareness of the anatomy in different age groups is important to prevent this from occurring. Anatomical features that contribute to these incidents are the caudal position of the dural sac in infants less than 1 year at the level of S3, only a few millimeters from the puncture site⁽²⁰⁾. That is why in this study we select patients with ages older than 1 year, while the reason behind restricting the study to maximum age of 7 years is that the sacral fat is usually start to develop at school age children making caudal somewhat difficult and better to be limited to children less than 7 years as stated by Johr et. al.⁽²⁰⁾.

Because infants and children are usually uncooperative and unlikely to remain calm while awake, caudal blocks and local infiltration are typically performed under general anesthesia⁽²⁰⁾.

The current study reveals that there is statistically significant difference between analgesia groups caudal group and paracetamol groups regarding pain free patients (FLACC score zero) in the first three hours after recovery. patients who received caudal block exhibit excellent and reliable postoperative pain relief when compared to paracetamol group. The same thing was reported by Hong et al.⁽²¹⁾

The pain intensity at the 1st and 2nd hour post recovery was low in caudal block group while it remains high in the paracetamol suppository group, then at the 3rd hour post recovery, the pain score was not significant among the two groups and intensity of pain was low. This can be attributed to the fact that paracetamol have delayed absorption (The time to peak effect after rectal administration is 60–180 min and rectal bioavailability can be poor)^(5,22).

Rectal paracetamol in a dose of 30 to 40 mg/kg may take up to 2 hours to achieve a therapeutic level and so is not effective for treating acute pain^(22,23).

There are several studies highlighted the comparative efficacy of different analgesic agents for postoperative pain relief, Jahromi et al.⁽⁴⁾ found that there were significant statistical differences between caudal groups and paracetamol suppository group.

Razavi and colleagues compared paracetamol suppository and caudal block in relieving pain after pediatric surgery and concluded that caudal block was more effective than paracetamol suppository⁽²⁴⁾.

In this study, the mean analgesic duration of caudal block, and paracetamol suppository groups

was (8.75, 7) hours respectively and it was significant, like Jahromi et. al.⁽⁴⁾ and Razavi, et al. ⁽²⁴⁾ that founded caudal group has longer analgesic effect duration than paracetamol suppository group.

Also we found that there was significant variation among the two analgesia groups regarding the number of patients who needs extra paracetamol suppository, time for first suppository needed. Our study is agreed with Conroy et al⁽²⁵⁾ who reported that caudal analgesia group need less supplementation with systemic analgesics compared to paracetamol group.

Here in this study we found that there is no significant difference in the mean time for walking between the two groups, while study of Bengisun et al.⁽²⁶⁾ founded that those patients received caudal block took a longer time to walk.

In this study there was no significant variation among the analgesia groups regarding, gender distribution, the mean age, mean weight, mean time of anesthesia and mean operative time.

Conclusion

Generally, it can be concluded that the children who received caudal Bupivacaine for postoperative analgesia, experienced a better and longer analgesia; yet, if caudal anesthesia is impossible (due to anatomical malformation at the puncture site, cutaneous infections, medication deficiency, etc.), at least a suppository of paracetamol may be beneficial in pain relieving at the first few postoperative hours.

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Homicidal Trends in Tribes of Bastar

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Abstract

Background: Till now no significant study has been done in homicide cases related to the tribal communities of the Bastar region, our approach has been to extensive study of the tribal communities, their life pattern towards the arms, and analysis of the homicidal committed in the tribal communities

Objective: the objective of the study was to study the pattern of homicidal cases in the tribal communities of Bastar in a community wise scale so that necessary steps can be taken to prevent homicide in communities which has high scale of homicidal cases.

Material and Method: The data of postmortem reports of all cases of homicidal deaths of tribals of Bastar region Chhattisgarh occurred in 11 years (2011 to 2021), which had been brought to the mortuary of Forensic Medicine department.

Results: Out of total of 122 cases evaluated, it consisted predominantly of male population of the age 31-40 years, Maximum number of homicidal cases were from Firearm injury=27 cases, Axe injury sustained stood 2nd= 22 cases. Maximum cases were found in the year 2015=16 cases. Maximum cases occurred in the Month of August=24 cases.

Conclusion: In our study we have found that Madia community followed by Maria community has most of the leading cases, government need to more emphasize on them to prevent cases from occurring. Homicidal deaths among tribals was mainly due to firearm injury, main factor for it was Naxalite and Maoist movement, which is predominant in Bastar region

Keywords: tribal, Bastar, homicide, injuries

Introduction

Chhattisgarh tribals comes under middle region of the 5 broad regional groups of tribes of India, where more than 55% of tribal people of India live. Regarding the distribution of ST population by

states, Chhattisgarh stands in 7th position with 7.5% of tribal population. Bastar region is the country of tribes, about 70% of the total population of the Bastar region is tribal. Abujh Marias(Narayanpur, Bijapur, Dantewada region) approx. population 70000(1981 census); Bhatra Tribe(Kondagaon,

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Jagdalpur region) with an estimated of 117297(1981 census); Dorla tribe(Konta, Bijapur region) mainly subside on hunting, fishing, collection of forest products, panda(slush and burn cultivation), Abujh Marias of the Bastar district have been placed under Particularly Vulnerable Tribal Group (PVTG's). Muria tribe(Narayanpur, Kondagaon, Antagarh region);Dhurwa tribe(konta region) with an estimated Of 42370(1981 census); Halba(all over bastar) with an estimated 23,6,375(1981 census) main occupation is cultivation of crops.¹

Material and Method

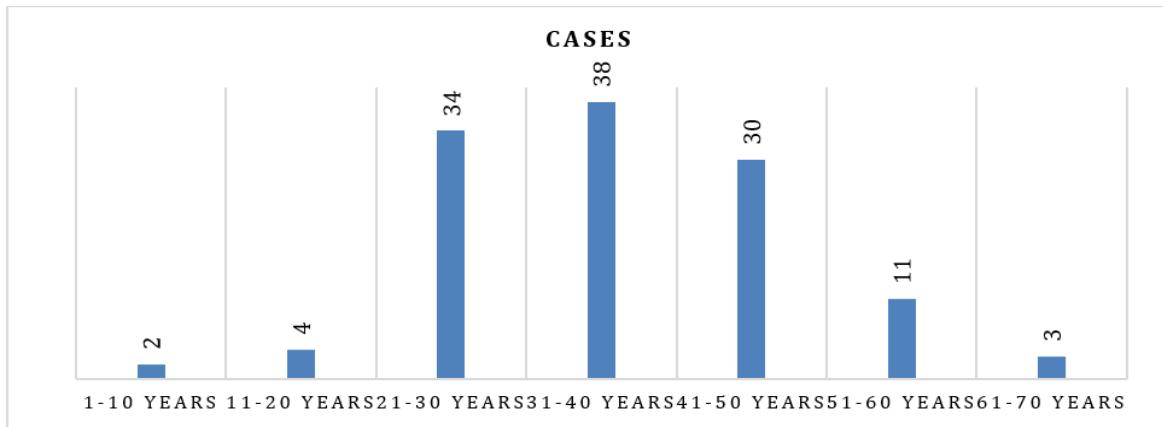
A data of post mortem reports of all cases of deaths of homicidal deaths of tribals of Bastar region Chhattisgarh been brought to the mortuary of Forensic Medicine department, Late Baliram Kashyap Government Medical College Jagdalpur, District Bastar Chhattisgarh from 2011 to 2022, total 14 years has been scrutinized and evaluated. In each

case a detailed examination was done on type of body region in which injuries were inflicted, which tribal community that person belonged, Manner of deaths, Cause of deaths was thoroughly evaluated.

Results

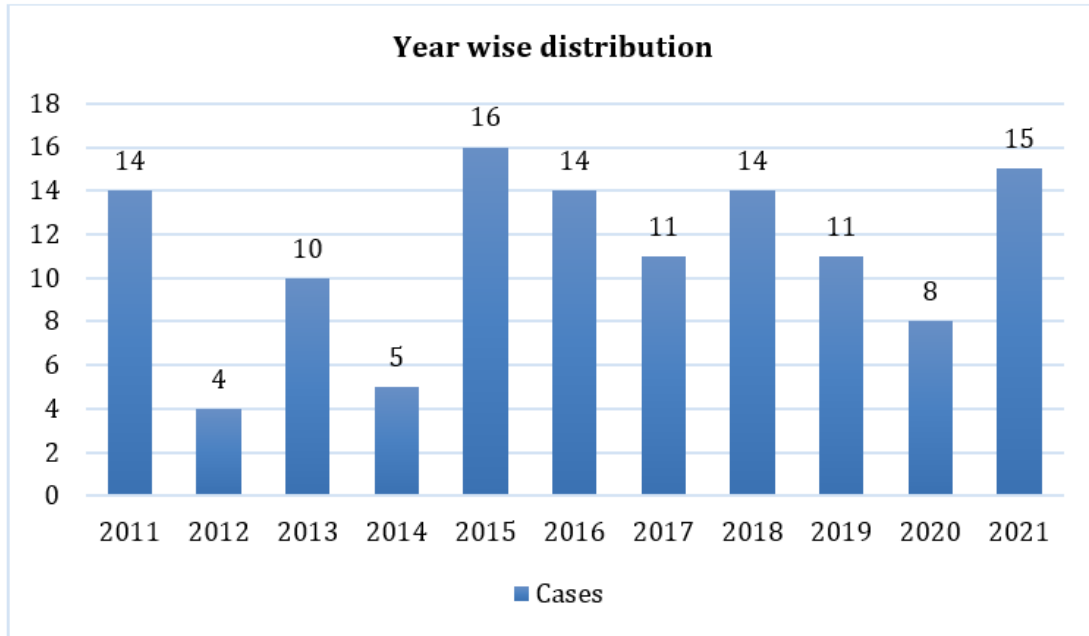
In the study conducted it was found that total 122 cases of deaths were reported in the period of 11years i.e., 2011 to 2021. The following the finding found out in the study.

1. **Sex Ratio of Homicidal cases among Tribal population:** Male- 94 cases, Female-28 cases.
2. **Age Group in cases:** It was divided in to 10-10 years age group e.g., 1-10 years,11-20 years etc. Maximum number of cases were found in the age group of 31-40 years i.e., 38 cases and Minimum number in 01-10 years i.e., 2 cases. **[Graph 1]**



Graph 1: Distribution of cases as per age of the Victims

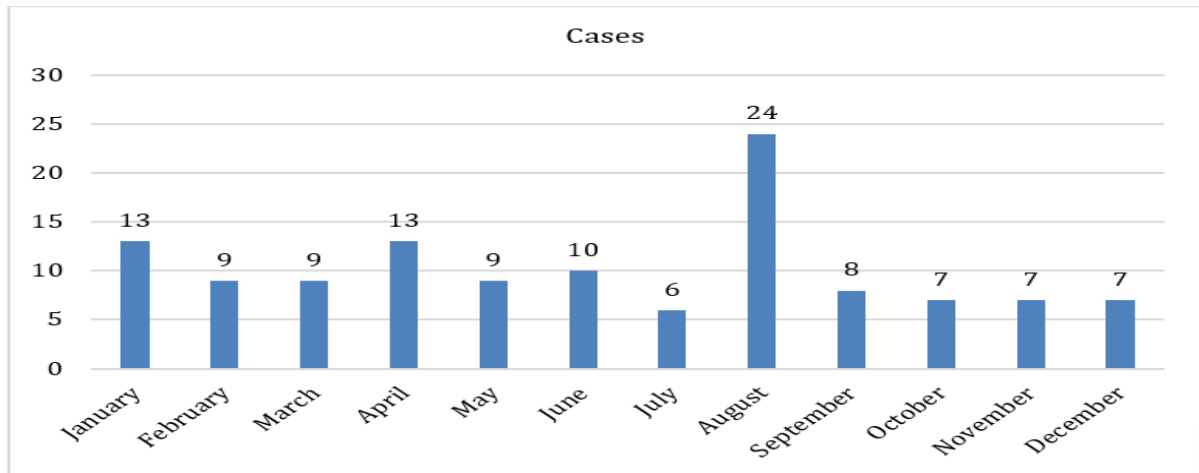
3. **Year of Cases Reported:** In detailed analysis of the cases reported, Maximum number of cases were found in the year 2015- 16 cases, 2011,2016,2018-14, 2017,2019-11,2013-10, 2020-8, 2014-5,2012-4 cases. **[Graph 2]**



Graph 2: Year wise distribution of cases

4. **Month of reported cases in the period of 2011-2022:** In detailed analysis of the cases reported, it was found that maximum

number of cases occurred in the Month of August-24 cases followed by January, April -13 cases; June- 10 cases. [Graph 3]



Graph 3: Month wise distribution of cases

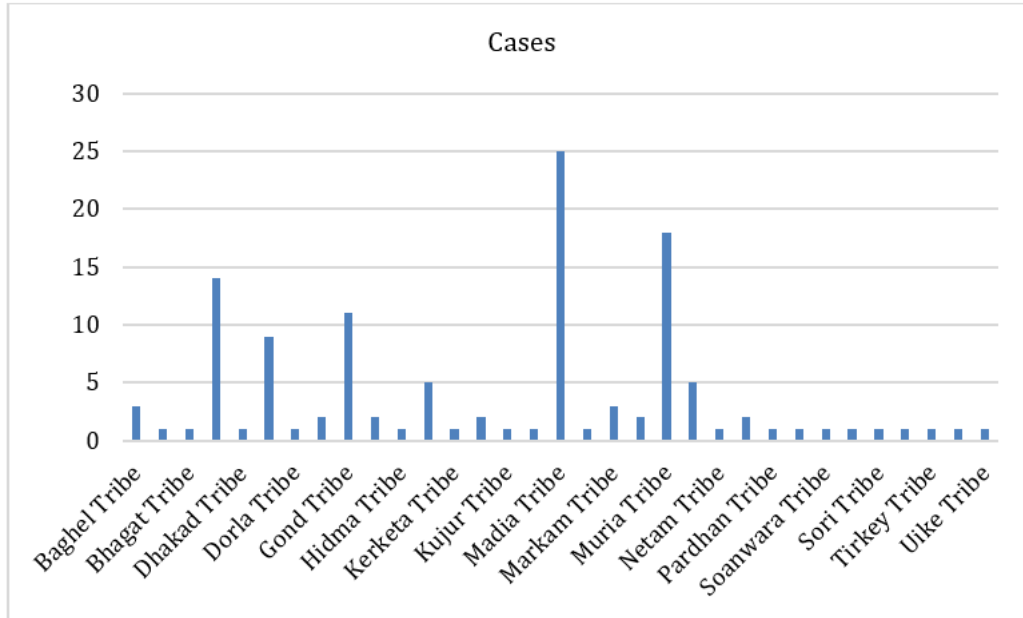
5. **Types of Homicide cases committed by different tribal community of Bastar region, nature of crime:**

Among the tribal communities of Bastar region, Madia community has been found to be predominant in the leading homicidal cases with total of 25 cases, maximum by beaten by stick=6 cases, Axe injury=6, Firearm injury=5, Beaten=2, knife injury=1, sharp weapon injury=1, Throttling=1,

Blast injury=1, Hit by spade=1, Strangulation=1. The Muria community stood second with total of 18 homicidal cases maximum were of Axe injury=5 cases, followed by knife injury = 3 cases, Beaten=2, Beaten by rod=1, Beaten by musal/ghotla=1, Beaten by wooden/peetha=1, beaten by rod=1, Firearm injury=2, Murdered and Hanged=1, Sharp weapon injury=1, Smothering=1. Bhatra community stood third with 14 cases. Maximum Beaten=4, Beaten by

stick=3, Axe injury=2, Iron barcha injury=1, Stab injury=1, Sharp weapon injury=1, Spade injury=1, Strangulation=1. Gond community stood fourth with 11 cases, Firearm injury=2, Beaten by stick=2, Burn injury/kerosene oil=2, Beaten by stone=1, Axe injury=1, Sharp weapon injury=1, Knife injury=1, Quarrelling=1. Dhurwa community stood fifth with

9 cases, Beaten=2, Sharp weapon injury=2, Beaten by brick=1, Beaten by stick=1, Axe injury=1, Knife injury=1, Spade injury=1. Kashyap community with 5 cases Axe injury=1, Firearm injury=1, Head injury=1, Multiple beating injury=1, Knife injury=1. Nag community with 5 cases, Firearm injury=2, injury by sone=1, Beaten by stick=1, Blast injury=1. [Graph 4]

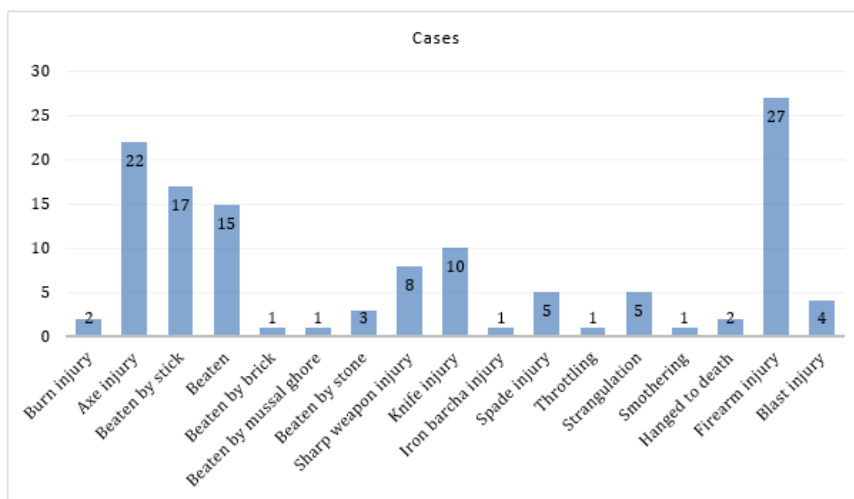


Graph 4: Distribution of cases as per different tribes

6. Pattern of Injury/Cause of Death among the Tribal population:

The Maximum number of fatal injury was from Firearm injury=27 cases followed by Axe injury total

22 cases, followed by Beaten by stick=17 cases; Beaten =15 cases; Knife injury=10 cases; Sharp weapon injury=8 cases; Spade injury & strangulation = 5,5 cases; Blast injury= 4 cases etc. [Graph 5]



Graph 5: Distribution of types of weapon and causes of death

Discussion

As per bulletin 'Crime in India 2019 Statistics Volume 1' published by National Crime Records Bureau(Ministry of Home affairs) Govt. of India page 46 Table 1A.4 IPC Crimes(Crime head -wise & State/UT-wise)-2019 for(murder section 302 IPC, The number of Incidences/Cases(I)=913, No. of Victims(V)=950, Crime Rate Per Lakh Population (R) =3.2²; In our study it was found total of 11 cases of homicide/murder was from ST population of Bastar region in the year 2019 comprising of 0.012% of total Homicide/Murders committed in the Chhattisgarh state. As Par "Homicides of American Indians/ Alaska Natives -National Violent Death Reporting System United States, 2003-2018" published by Centre of Disease Control and Prevention, Morbidity and Mortality Weekly Report, Surveillance Summaries/ Vol. 70/ No. 8 November 19,2021; Total homicides committed by American Indians/Native Americans for the period of 2003 to 2018 was 2226 with males predominating 1681 cases and females= 545 cases in 34 states of US. Median age of AI/AN victim was 32 years(interquartile range 23-44 years) more than 1/4th (27.5% of AI/AN victims were aged 25-34 years. In the Method of Injury Firearm injury=1078 cases(48.4%), Sharp Instrument=467(21.0%), Blunt Instrument=208(9.3%), Personal weapons (hands, feet or fists) =206(9.3%), Hanging/Strangulation/ Suffocation=72(3.2%)³; While in our study total homicides committed by tribal community of Bastar for the period of 2011 to 2021 was 122 cases with males predominating=94 cases and Females = 28 cases in Bastar district of Chhattisgarh(India). Median age of Tribal community victims was 34.5 years, Near to 50% of total 122 cases(49.2% of Tribal community were aged 25-40 years. In the manner of injury/cause of death Firearm injury= 27 cases(22.1%), Axe injury=22 cases(18.03%), Beaten by stick=17 cases(13.9%), Beaten by (hands, fists, feet)= 15 cases(12.3%), Knife injury=10(8.2%), Sharp Instrument= 9(7.3%), Blunt instrument =7(5.7%), Hanging/Strangulation/ Throttling/ Smothering= 9(7.4%).

Knauft et. al. have reported in their paper on the incidence of Gebusi Tribe Homicide; of 394 adult deaths in genealogical survey; nearly 1/3rd (129=32.7%) were homicidal. Homicidal accounted

for 29.3% of female death and 35.2% male deaths⁴; While in our study out of 122 deaths, male tribal population accounted for 77.94% & Female tribal accounted for mere 22.95%.

Tekade et. al. have reported in their paper on the Study of Deaths due to firearm injuries in tribal region of Bastar; in the 150 cases of firearm deaths from 2010 to 2015, Male : Female ratio was found to be 5:1(125 Males:25 Females). In the age group firearm injuries were predominant in 21-30 years accounting for 38.7%, followed by 31-40 year. The homicidal cases predominantly accounted for 136/150 cases(90.7% cases) and rest 14 cases were suicidal(9.3%)⁵. While in our study Male : Female ratio was found to be 3.5:1, In the age group firearm injuries were predominant in 21-30 years=14 cases(52%) followed by 31-40 years (48.1%). Homicidal cases of firearm injury accounted for 127(99.2) cases while suicidal firearm injury was only 1 case(0.8%).

Conclusion

In our study we have found that Madia community followed by Maria community has most of the leading cases, government need to more emphasize on them to prevent cases from occurring. Homicidal deaths among tribals was mainly due to firearm injury, main factor for it was Naxalite and Maoist movement, which is predominant in Bastar region, Government needs to pay attention to the main issues of tribals, their life and culture depends on forests, deforestation should be stopped, counselling sessions should be made to tribals about government welfare schemas. Second predominant cause of homicide was axe injury, in 2012 police personnel implemented ban on tribals from carrying axe and other traditional weapons in weekly market⁶, but these axe etc are a part of tribal society culture, instead of banning government should arrange for fast track solution of disputes in village level and counselling sessions should be arranged for disturbed tribals of the locality.

Ethical Clearance: Not Applicable

Source of Funding: Self

Conflict of Interest: Nil

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Procedure to Proceed Under the Provision of Section 161 CrPC

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Abstract

Police Investigating Officer plays a vital role in a crime investigation. They are the first contact persons for a legal inquiry. Sec. 161, Cr.P.C describes the laws about how a police can examine a person, though there are many other related legal acts. A statement of a witness recorded by Investigating Police Officer during the process of investigation is neither administered under oath/affirmation nor tested by cross-examination. So, as per Indian law, it can't be considered a piece of substantive evidence. However, it may be used by the defense for contradicting the prosecution witness. The statements made to the Police Investigating Officer by witnesses are required to initiate a trial in a court of law.

Key Words: Police investigation, Criminal Procedure Code, Evidence, Summon, Penalty.

Introduction

The Code of Criminal Procedure which is popularly known as Criminal Procedure Code, Cr.P.C deals with police duties in arresting offenders, absconders and in the production of documents, etc. during their investigation of offences. Sec.161, Cr.P.C deals with the rules of examination of witnesses by the police. It may be stated as bellow:-

1. Sub-sec. (1)161, Cr.P.C - A police officer may examine orally any person supposed to be acquainted with the facts and circumstances of the case.
2. Sub-sec. (2) 161, Cr.P.C - Those examined persons need to answer all questions truthfully, except those questions which can make him liable for a criminal charge or to

pay a penalty.

3. Sub-sec. (3), Cr.P.C - The Investigating Police Officer make a written note of the statement thus obtained from the person.

The criminal justice system administers the standard of conduct needed to protect people in the community. Here, police plays a vital role in all types of crime investigation. For a systematic and lawful investigation police are the first person who arrive at the crime scene. The police mainly concern themselves with maintaining discipline and crime prevention, prevention of arrests, investigations and detection, control of crowds, public control at festive events, preventing riots, car traffic and more. Under the guidelines of Indian Penal Code 1860, Criminal Procedural Code 1973, Indian Evidence Act

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1872, the Police Act 1861, police conducts criminal investigations. Sec. 157 to 173 of Cr.P.C. provide the guidelines regarding the duties and powers of the police investigating officer of the crime. In this study we attempt to study the elementary values and recordings of their statements under Sec. 161, Cr.P.C. 1973.

Police Investigation of Crime:

There are many legal stages before the start of a court procedure and one such step is investigation by police. The Honorable Supreme Court of India, in *H.N. Rishbud & Inder Singh Vs State of Delhi*,¹ held that criminal police investigation consists of the following steps:-

1. Visiting the crime spot
2. Ascertainment of facts of the case
3. Discover & arrest of the suspected offender
4. Collection of evidence
5. Formation of opinion if whether it is necessary to place the accused before a Magistrate for trial and if so taking all necessary actions by preparing a charge sheet under Sec.173, Cr.P.C. 1973.

Examination of Witnesses by Police:

Sec.161, Cr.P.C, 1973 defines the Examination of witnesses by police. Under this section, any police officer, not below such a rank as prescribed by the state government, may examine orally any person supposed to be acquainted with the facts and circumstances of the case. The term "any person" includes accused also. In simple words it is also known as "Police interrogation". The persons, thus examined by Investigating Police Officer, require to answer all questions except "questions the answers to which would have a tendency to expose him to a criminal charge or to a penalty or forfeiture." Such persons are legally bound to state the truth. If such person gives false statement then he may be prosecuted under Sec.202 & 203, I.P.C.² For giving false statement he also may be punished under the sec. 193, I.P.C. However, the accused may enjoy the privilege to remain silent during police interrogation as he got "right against self-incrimination" as per Sec.161 (2) Cr.P.C and Art. 20(3) of Indian Constitution³. But, if a witness, during police interrogation, does not give answer to the questions then he may be punished

under the Sec. 179, I.P.C.⁴.

All the statements of all witnesses must be documented in writing form. Now this statement may be recorded by using suitable audio-video electronic means. Signature of witnesses not necessary rather it is prohibited under the sec. 162, Cr.P.C. Violation of this may diminish the value of the testimony of the witness. Statements of every witness must be recorded separately as clearly described under Sec.161 (3) Cr.P.C read together with S.173 (3) Cr.P.C. As per Sec.161 (3), all police statements of witnesses should be only in direct form of speech. So, the writing should be describable as a statement of the witness himself and as far as possible it should be as nearly as possible, a complete record of what he has told. One copy of such prepared statement must be provided to each accused separately free of cost before the commencement of the trial. If the statement was recorded first in a vernacular language and then translated into English then a copy of the original statement must be furnished to the accused⁵. In addition to this other necessary documents must also be furnished to the accused as he has the right to get them.⁶

The main object of this section is to place the truth in the form of evidence before the court at the time of trial. Such collected information is also useful for the court in framing charges against the culprit.

Evidentiary Value of Statements Made to The Police:

A statement of a witness recorded by Investigating Police Officer during the process of investigation is neither administered under oath/affirmation nor tested by cross-examination. So, as per Indian law, it can't be considered as substantive evidence.^{7,8} However, it may be used by the defence for contradicting the prosecution witness.⁹ Under sections 194 and 195, I.P.C no criminal cases may be initiated by considering such a statement framed by police [C]. It is also opined that statements taken down by police are often taken down in a haphazard manner so sometimes they may not be useful as corroborative evidence and by the same logic not useful for contradiction. However, there may not be any bar in the use of civil cases.¹⁰ Further, it is pointed out that, if signature or thumb prints are obtained

during the statement recording by the police, such statements are unreliable.

Any delay in recording statement by police under sec.161, Cr.P.C not necessarily discredit their testimony if the reason is satisfied by the court. It was well observed by the Honourable Court in case of Ganesh Bhagvan Vs State of Maharashtra, 2005 DMC 445.

Amendments of Sec.161, Cr.P.C:

The two important amendments are:-

1. The Criminal Procedure (Amendment) Act, 2008 a proviso was inserted to S.161 (3) which states that the "statement may be recorded by audio-video electronic means". It was enacted with effect from 31st Dec'2009.
2. According to the Criminal Law (Amendment) Act, 2013 No, 13 of 2013 which was enacted with effect from 3rd Feb'2013, in certain cases of crime against woman or children, under certain Indian Penal Codes such as Sec.354, Sec. 376. etc., statement must be recorded by a lady police officer or lady officer. It is inserted in sub-section (3) of Sec.161, Cr.P.C.

Discussion

As soon as possible statement must be obtained from witnesses however mere delay of few hour in recording the statement does not mount to serious infirmity. There must not be any room for suspicion that delay was deliberate on the part of police giving a chance to set up a case of his own choice. In State of NCT of Delhi Vs. Ravikant Sharma case, honourable court observed that statement recorded under sec 161, Cr.P.C held that any direction to supply "gist" of such statements was unsustainable because such statement of witnesses recorded during investigation does not include interpretation of Investigation Officer.¹¹ Investigating Police Officer can't force the accused to answer all questions if the answers thus sought has a reasonable prospect of exposing him to guilt in some other accusation, actual or imminent, even though the investigation underway is not with reference to that.

In cases of contradictions i.e. conflict between a statement given to police and testimony before the court, the former statement may be used to contradict

the later (P. Ailamma Vs. T. Zedson, 1989). In an omission case, i.e. skip or slip which means exclusion or leaving out, the matter is to be tested by the court if it is a material omission or not and if so it will be termed as a material contradiction.

Conclusion

Though there are certain loopholes in recording the statements by the Police Investigating Officer, it plays a vital role in the preparation of the initiation of a court procedure in a trial. In case of Asan Tharayil Baby vs. State of Kerala, 1981, the Honourable Court observed that the main object of this section 161 of Criminal Procedure Code is to protect the accused both against over-zealous police officers and untruthful witnesses. But when the prosecution witness turns hostile, with the permission of court the public prosecutor can cross examine that witness by using his 161 statements to establish contradiction. Timely and unbiased duty of the police is of paramount importance here.

Ethical Clearance: Obtained as per institute guidelines

Source of Funding: Nil

Conflict of Interest: None to declare

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The effect of herbal treatment of *Hyphaene Thebaica* (Doum) and *Nelumbo Nucifera* (Lotus) on Induced Hyperlipidemia and Hypertension in Male Wistar Albino Rats

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Abstract

Hyperlipidemia is a condition in medical terms where any lipid profile or else the lipoproteins are increased in the blood stream. Elevated LDL is risky and the best indicator of atherosclerosis risk. Hypertension is one of the most associated disease with dyslipidemia. For HDL-C, the risk of hypertension is supposed to be increased at such low levels. There are various medicinal plants, which are supposed to be a very important source for upcoming chemical substances which are having the potential for therapeutic effects. There are various phenolic as well as flavonoids substances present in *Hyphaene Thebaica* (Doum). These ingredients usually work as an antioxidant that are very helpful to provide a control towards hyperlipidemic. *Hyphaene Thebaica* has antimicrobial, antidiabetic antihypertensive, hypolipidemic and antioxidant effects. Yet another element called as *Nelumbo Nucifera* (Lotus) is very useful for medicinal purposes in terms of Oriental medicine. These plants are very hypolipidemic, antioxidant activity, antipyretic, antiplatelet activity and hypoglycemic activity.

Objective of the study: to estimate the effects of doum and lotus methanolic extracts on hyperlipidemia, hypertension and diabetes on lipid profile parameters and hypertension parameters like angiotensin converting enzyme and aldosterone.

Material and Methods: The study in this paper was done on fourth rats with the species of Wistar Albino. These rats are divided in to four groups and all are male samples. First one was control group and hyperlipidemia and hypertension induced in three groups. Feeding hyperlipidemic and hypertensive rats with extract of doum in third group and lotus extract in fourth group.

Results: The effect of both extracts on lipid profile parameters, Angiotensin converting enzyme and aldosterone were parallel in significant lowering them. Doum had strong effect on body weight but lotus had strong effect on fasting blood glucose level.

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Conclusion: Doum and Lotus contain flavonoids and phenols which cause lowering in lipid profile, Angiotensin converting enzyme, aldosterone, body weight and fasting blood glucose.

Recommendation: Using the extracts of lotus seeds and doum fruit can be used as adjuvant treatment in hyperlipidemia, hypertension and diabetes.

Key words: Hyperlipidemia, Doum, Lotus, Aldosterone

Introduction

Dyslipidemia is proved to be one of the most important factors which give rise to cardiovascular diseases. Approximately 37% percent of population in Egypt is subjected to have higher blood cholesterol levels as per the observation from various researchers. Many risk factors can be expected to evolve, which are responsible for the development of atherosclerotic cardiovascular diseases; therefore, it becomes essential factor to assess the nature of cardiovascular risk before it becomes imperative²⁸. As per the definition stated in the background, Hyperlipidemia is a medical condition which is characterized by the observation of increase any or all lipids profile and lipoproteins in the blood. This estate is also called sometimes hypercholesterolemia or hyperlipoproteinemia. There are also certain conditions in which a relatively low density of lipoprotein cholesterol is observed. This type of lower density is one of the best indicators for atherosclerosis risk⁶. Investigating it further leads us to Dyslipidemia which is also one of the most state in which large amount of lipids in the blood can be introduced, thereby leading to increased level of cholesterol or also including triglycerides. This can also lead to the low levels of the high-density lipoprotein cholesterol²⁴. Hypertension is one of the most associated disease with dyslipidemia. Increased level of serum for TC, LDLC, and cholesterol are supposed to be associated with the probability of improved risk towards hypertension. For HDL-C, risk of hypertension was increased at low levels.

Hypertension and dyslipidemia are investigated by various researchers as to important risk factors that may lead towards cardiovascular diseases. There are certain epidemiological studies that are conducted on population basis. These studies have also reported that an unexpected and gradual increase in the blood pressure of a normal human being or prevalence of the hypertension are also associated with the

increased level of lipids in bloodstream²². The drugs which are a remedy for the above stated cause comes with several side effects. It is also observed that the consumption of these rock samples which are synthetic in nature may cause hyperuricemia, diarrhea, nausea, myositis, gastric irritation, flushing, dry skin and abnormal liver function. In order to overcome this problem of synthetic drugs, medicinal plants are being studied closely. It is believed that these plants can be a very important and great source for various new chemical substances that can provide potential therapeutic use. More than 80% of the global population scenario depends on various medicines as an input in various developing countries. The use of these traditional folk medicine therapies is very helpful for treating such ailments²⁶. Hyphaene Thebaica (Doum) contains certain extracts of the water having specific components like phenolic and flavonoids. These substances can act as an antioxidant that may help for the control of hyperlipidemic. Hyphaene Thebaica has antimicrobial, antidiabetic, antihypertensive, hypolipidemic and antioxidant effects⁷. Doum has pharmacological and nutritional properties⁴. It contains high amount of amino acids valine, leucine, and some non-essential amino acids such as (alanine, aspartic acid, glutamic acid, glycine, serine and proline). It is also was very rich in minerals such as potassium and phosphorous³. yet another important species of an aquatic plant termed as *Nelumbo Nucifera* (Lotus) is very important and useful in various medication purposes. All the parts of the plant can be utilized to provide solutions towards various ailments. They will be helpful enough to synthesize various medicines that can heal many problems as an oriental medicine. These plants are very effective to potential hypolipidemic, antioxidant activity, antipyretic¹⁰, antiplatelet activity¹¹ and hypoglycemic activity²⁰.

Materials and Methods

Ethical Approval: This study was carried out in

Research center of Experimental Animal associated to Faculty of Veterinary Medicine- Banha University after the approval of all steps of the experiment with serial N° (000031).

Study Period: The study was carried in the period from March to May 2021.

Plant Materials: Hyphaene Thebaica and Nelumbo Nucifera seeds are obtained from Botanical Market and authorized by plant taxonomist who used it for preparation.

Preparation of plants Extract: The H. Thebaica decoction and N. Nucifera seeds powder (500gm) were presented under reflux of 75% methanol in a glass jar at 70°C. The extracts were filtrated by Whatman apparatus, its filter paper 0.45 micron under pressure. Then at rotatory evaporator at 60°C. Then they were put in methanol 5% with glycerin 0.5% in purified water. The final concentration was each 1 ml contain 750mg of each extract.

Animals: Forty male Wistar Albino rats with average weight between 190-200g (219.10±15.20) were used in this study. They were kept in cages each had 5 with mesh bottom galvanized metal wall boxes under controlled environmental and nutritional conditions amount 25-28 C° and humidity about 55-60% in lab of research center. They were fed standard rat diets and supplied with fresh tap water ad libitum, with a 12-h dark and light cycle. The animals were acclimatized for 2 weeks prior to the beginning of the experiment. Then divided into 4 groups. G1: as a control. G2,3,4: As experimental groups fed by high fat diet and injected weekly by Hydrocortisone and Nondrolone for 4 weeks at doses of Hydrocortisone (succinate sodium 100mg) 1.8mg/kg body weight subcutaneously and Nandurabolin (Nondrolone decarbonate 50mg/ml) 10 mg/kg body weight intramuscular in the gluteal region. Samples

were taken from G1 and G2 after rats were sacrificed. Then G3 and G4 continued with high fat diet and daily dose of Hyphaene and Nelumbo respectively by dose 500mg/kg body weight taken by gastric tube for 4 weeks. The group of the rats that were under observed were checked for their symptoms of toxicity as well as mortality. These observations were done for 4 and 24 hours respectively. The control group ate standard diet with energy less than 1830kcal/kg diet and the G2, G3 and G4 ate high fat diets with energy 3014 kcal/kg.

Samples Collection: Blood samples were collected from the orbital plexus and intra-cardiac of the rats two times; first time at the end of the first month and second was at the end of the second month. Daily measuring of fasting blood sugar from tail blood by glucometer and daily weight measuring by balance. The serum was separated by centrifugation at 4000 rpm for 20 minutes and then preserved in ice bag to be estimated in the same day.

Biochemical Measurements

1. Lipid profile was determined in all groups, included Total Cholesterol- Triglycerides- LDL-C and HDL-C.
2. Aldosterone hormone.
3. Angiotensin converting enzyme.

Statistical Analysis: The analysis of the data was done based on the SPSS program with version number 23. The record values were expressed as mean and standard deviation (Mean± SD). The one-way analysis of variance (ANOVA) was used to determine the most significant effect of feeding Hyphaene Thebaica and Nelumbo Nucifera. A P-value less than 0.05 (P<0.05) was significant.

Results and Discussion

Table 1: Changes in Serum Concentrations

changes in serum concentrations of Cholesterol in mg/dl.				
Cholesterol	G I	G II	G III	G IV
Range	76.8 - 90	110 - 180	76.5 - 83.2	65 - 79
Mean ±SD	82.29 ± 3.85	141.09 ± 24.64	80.24 ± 2.55	72.33 ± 5.07
P value	0.001*			

G I & G II	G I & G III	G I & G IV	G II & G III	G II & G IV	G III & G IV
0.001*	0.722	0.09	0.001*	0.001*	0.175
Changes in serum concentrations of Triglycerides in mg/dl					
TG	G I	G II	G III	G IV	
Range	85 - 113	109.5 - 160	100 - 135	95 - 121	
Mean \pm SD	102.78 \pm 8.44	143.55 \pm 15.09	110.83 \pm 10.31	105.20 \pm 7.77	
P value	0.001*				
G I & G II	G I & G III	G I & G IV	G II & G III	G II & G IV	G III & G IV
0.001*	0.104	0.619	0.001*	0.001*	0.251

Table 2: Changes in Serum Concentrations of Lipoprotein

Changes in serum concentrations of High-density Lipoprotein (HDL) in mg/dl.					
HDL	G I	G II	G III	G IV	
Range	46.2 - 55.4	29.4 - 49	32.5 - 55	41.5 - 54.6	
Mean \pm SD	50.02 \pm 2.78	41.41 \pm 6.25	45.39 \pm 5.93	47.06 \pm 4.66	
P value	0.005*				
G I & G II	G I & G III	G I & G IV	G II & G III	G II & G IV	G III & G IV
0.001*	0.049*	0.202	0.089	0.018*	0.468
Changes in serum concentrations of Low-density Lipoprotein (LDL) in mg/dl between control, hyperlipidemic and hypertensive group, Doum group and Lotus group					
LDL	G I	G II	G III	G IV	
Range	18 - 24.5	34.7 - 73.35	15 - 23.6	16 - 22.3	
Mean \pm SD	21.50 \pm 2.37	48.21 \pm 13.86	20.63 \pm 2.75	19.86 \pm 1.77	
P value	0.001*				
G I & G II	G I & G III	G I & G IV	G II & G III	G II & G IV	G III & G IV
0.001*	0.789	0.615	0.001*	0.001*	0.813

Table 3: Changes in Serum Concentrations Aldosterone Hormone

Changes in serum concentrations of Aldosterone Hormone in pg/ml					
Aldosterone	G I	G II	G III	G IV	
Range	75 - 346	165 - 573	69.1 - 480	108 - 210	
Mean \pm SD	169.00 \pm 86.88	394.50 \pm 139.75	182.91 \pm 115.97	155.00 \pm 37.91	
P value	0.001*				
G I & G II	G I & G III	G I & G IV	G II & G III	G II & G IV	G III & G IV
0.001*	0.763	0.762	0.001*	0.001*	0.546
Changes in serum activity of Angiotensin Converting Enzyme (ACE) in U/L					
Angiotensin	G I	G II	G III	G IV	
Range	40 - 233	130 - 235	90 - 193	85 - 187	
Mean \pm SD	101.50 \pm 73.33	190.80 \pm 36.08	141.10 \pm 33.55	138.50 \pm 35.54	
P value	0.002*				
G I & G II	G I & G III	G I & G IV	G II & G III	G II & G IV	G III & G IV
0.001*	0.071	0.091	0.025*	0.019*	0.903

Table 4:. Changes in Body Weight

Changes in body weight in (grams) between control, hyperlipidemic and hypertensive group, Doum group and Lotus group										
Weight	G I		G II		G III		G IV			
Range	190 - 240		160 - 340		180 - 260		192 - 300			
Mean ±SD	219.10 ± 15.20		274.68 ± 39.07		205.88 ± 19.91		222.00 ± 20.85			
P value	0.001*									
G I & G II	G I & G III		G I & G IV		G II & G III		G II & G IV		G III & G IV	
0.001*	0.021*		0.611		0.001*		0.001*		0.005*	
Changes in serum concentrations of fasting glucose in mg/dl between control, hyperlipidemic and hypertensive group, Doum group and Lotus group										
Fasting glucose level	G I		G II		G III		G IV			
Range	87 - 119		100 - 139		90 - 130		80 - 123			
Mean ± SD	105.20 ± 9.33		131.85 ± 27.26		115.18 ± 11.43		106.68 ± 10.18			
P value	0.001*									
G I & G II	G I & G III		G I & G IV		G II & G III		G II & G IV		G III & G IV	
0.001*	0.007*		0.686		0.001*		0.001*		0.021*	

Discussion

Various diseases such as hypertension, diabetes and hyperlipidemia can be healed up with the help of various medicinal plants. These natural plants are one of the most important sources that will be very helpful for primary health care. Amongst the global population approximately 65 to 80% of the human beings in various developing nations rely majorly on these medicinal plants. One of the most consumed beverages across Egypt is Doum. It has a unique property that this medicinal plant is rich in its content of polyphenolic compounds. It can be used as a very effective remedy towards hypertension¹². Blue lotus was distributed along the Nile River valley. All parts of the plant have valuable therapeutic effects. The bioactive constituents of both plants (doum and lotus) phenols, flavonoids and alkaloids enable them to have multiple therapeutic effects²³.

Previous studies proved the hypolipidemic, antihypertensive and hypoglycemic effects of H. Thebaica and N. Nucifera^{14,5,12,7,18,19,8}, and¹. Our results showed that H. Thebaica and N. Nucifera have significant lowering effect to lipid profile that comprises of the complete levels of cholesterol, as well as Triglycerides including low density lipoprotein. The lowering effect of Thebaica agreed with Bayad,

2016 who proved that regular administration of aqueous extract of H. Thebaica for 1or 2 months with 0.5 and 2gmg/kg improve lipids, total cholesterol, Triglycerides. One of the biggest advantages is in the treatment towards hypercholesterolemia. This is more famous amongst Egyptians who have a comparatively low high density of lipoprotein. (HDL-C) is the prevalent lipoprotein abnormality. The two major risk factors responsible are total cholesterol and LDL. Very high levels of total cholesterol can prove to be hazardous for health of human being²⁹. In the same context¹³ portrayed that triglycerides are one of the major reasons behind the coronary heart disease. They also claimed to be the effective drug for the anti-hypercholesterolemic syndrome. However, these drugs are not useful to reduce the level of triglycerides. However, they concluded that the aqueous extract of Doum is helpful, since it considerably lowers the effect of triglycerides. The results proved significant increase in the level of HDL in the group treated with doum and significant decrease LDL level in the same group which agreed with¹⁴ who proved that supplementation with doum was parallel to reduction of lipoproteins level in the form of decrease LDL and increase in HDL. The results agreed with¹⁶ reported a hypolipidemic effect of doum. ¹ proved that the degree meant in the level of

serum TG, TC and LDL with the observed increased level of HDL in rats which have been treated with more levels of the flavonoid H. Thebaica.

Our results showed the significance lowering effect of *N. Nucifera* on lipid profile include TC, TGs and LDL while significant increasing in HDL. These results agreed with ⁸ who proved that *N. Nucifera* has improved lowering effect of lipids in induced diabetic hyperlipidemic rats. Also ²¹ In his article emphasized that the anti-obesity efficacy, which arrives because of the constituents isolated from *N. Nucifera* via stimulated lipolysis in mice adipose tissue. *N. Nucifera* has suppression effect on α -amylase, lipase activity and lipid metabolism and so, lowered lipids in the blood ²³. Also, ¹⁸ proved that Lotus showed positive effects on obesity, endocrine system, and lipid metabolism through its effect on TC, TG and LDL. Other results produced by ²⁶ that *N. Nucifera* had hypolipidemic effect by decreasing TC, TGs, LDL and VLDL and increase HDL in induced hyperlipidemic rats and compared the results with those under treated statins therapy. Our results showed the antidiabetic effect of Doum and Lotus through significant results in groups of rats which treated with daily doses of methanolic extract of doum and lotus but there was significance in results between both groups which indicated the strong antidiabetic effect of Lotus over than Doum. Our results of antidiabetic effect of Doum agree with ¹⁵ who proved that plants which include polyphenolic contents had α -glucosidase inhibitory effect and so had postprandial hypoglycemic effects. Also, our results agree with ⁷ results that the proper observations for the aqueous extracts of Doum, contributes towards lowering of the blood glucose level. This complete phenomenon can last from one month till two months. The pathogenesis of diabetes mellitus including the chances of managing the oral administration of hypoglycemic herbal treatment have been extensively studied. Our results of antidiabetic effect of *N. Nucifera* agree with ⁸ who proved the reduction effect of alcoholic extract of *N. Nucifera* on blood glucose level in induced diabetic rats. It was found that the level of A1CHb levels in the rats was reduced to a significant amount. This effect was through reversal of insulin resistance or increasing insulin secretion due to its regeneration

effect of langerhans β -cells of pancreas. Our results showed significance anti-hyperglycemic effect of both Doum and Lotus, but Lotus was significantly higher in effect than Doum.

Obesity and hyperlipidemia are closely connected and responsible towards the activation of the renin-angiotensin system (RAS) in humans, as it has been observed in various species of diet-induced obese rodents and in several genetic models ³². The main impact of such issue leads to improvement and sudden increase in the plasma levels of angiotensinogen. This observation was due to adipocyte hypertrophy. Angiotensinogen in the body is produced with the help of the action of renin. This gets converts to angiotensin II (Ang II) with the help of the angiotensin converting enzyme (ACE). The higher level of the Ang II tends to induce large level of contradiction of vascular system and thereby it leads to the increase in blood pressure. The entire process is catalyzed with the ACE whereat tries to breakdown the vasodilator ¹⁷, as a result of this phenomenon increase the level of blood pressure is observed as an additional contribution. Various researchers have also implied towards the connection between angiotensin II levels, renin, body mass index (BMI) and ACE as a result of the increase in the adipocytes, which is an important source of these hormones ⁹ and ³⁰.

In the present study both plants either Doum or Lotus contain different percent of flavonoids, polyphenols and alkaloids which play an important role in lowering ACE which is the key in regulation of blood pressure. Our results showed significant increase in ACE level in induced hyperlipidemic hypertensive group of rats, while with administration of daily doses of Doum extract and Lotus extract there were significant reduction in ACE in serum. Lotus group showed more reduction than Doum group even there was no significant variation between both. The results that we found are also in accordance with ¹ and proved that *Hyphaene Thebaica* had an anti-hyperlipidemic and ACE inhibitory effects. *Nelumbo Nucifera* is well known to be a traditional treatment for blood pressure higher levels and heat imbalance of the body as per ²⁷. Our results agree with ³¹ who proved that active product of *N. Nucifera* is neferine which inhibits angiotensin II-stimulated

proliferation in vascular smooth muscle cells through hemeoxygenase-1 as well as down-regulating fractalkine gene expression³³. N. Nucifera decrease the blood pressure through its effect of antioxidant through its role in inhibiting harmful effects of free radicals which participate in developing many diseases like diabetes, cancer, inflammation and atherosclerosis⁸.

Our results showed significant lowering aldosterone hormone in group III and IV, but no significance difference between both groups. Group IV(Lotus) showed more lower level than group III (Doum) this agree with the role of Doum and Lotus in lowering blood pressure, these present results are explained with² study who proved that Nitric Acid (NO) has a good role in protection and stimulation of suprarenal glands from changes occur with stress, so NO has a stimulation role for secretion of aldosterone hormone.⁸ proved that N. Nucifera has a scavenger effect on Nitric oxide and it will cause lowering in aldosterone level and following regulation of blood pressure. Our results showed significant lowering in body weight in both groups treated with Doum and Lotus. Group III(Doum) gives low body weight more than group IV (Lotus). N. Nucifera causes significance decrease in body weight which agree with⁸ in the study of the effect of N. Nucifera on the induced diabetic rats by the effect of drugs with increase in its the body weight. It is regulated by the effect of daily dose administrated of N. Nucifera extract. Our results also agree with¹ who proved that H. Thebaica reduced the BMI of the experimental rats fed with high fat diets and treated with extract of H. Thebaica.

Conclusion

Doum and Lotus contain flavonoids and phenols which cause lowering in lipid profile, Angiotensin converting enzyme, aldosterone, body weight and fasting blood glucose.

Ethical Clearance: The researchers were able to ask permission to conduct the study and were given permission to conduct the experiments.

Source of Funding: There was no fund produced from any organization. This work is a self-financed study.

Conflict of interest: The authors declare that there is no conflict of interest.

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A Acute Appendicitis Induced by Traditional Iraqi Grilled Fish Bone (Masqouf)

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Abstract

A acute appendicitis caused by traditional Iraqi grilled fish bone (Masqouf), In Al-shifaa private hospital, Iraq, diyala governorate.

Keywords : Obstruction, Appendicitis, Fish bone

A 23 years old male patient, from Iraq, diyala governorate, presented to the Al-shifa private Hospital to emergency department, 48 hours duration, with right Lower abdominal pain, on clinical examination, there is right iliac Fossa, pain and rebound tenderness, the patient was diagnosed as a case of acute appendicitis, ultra-Sound revealed acute appendicitis, WBC= 8,000 mm/cu.

Operation done under general anesthesia with an Grid iron incision, intra operatively an inflamed appendix caused by Fish bone seen in the wall of appendix, removed the fish bone first (Figure.1), then appendectomy had done for him (Figure.2). Patient had history of eating traditional Iraqi meal grilled Fish (Masqouf) (Figure.3) 4 days before admission.

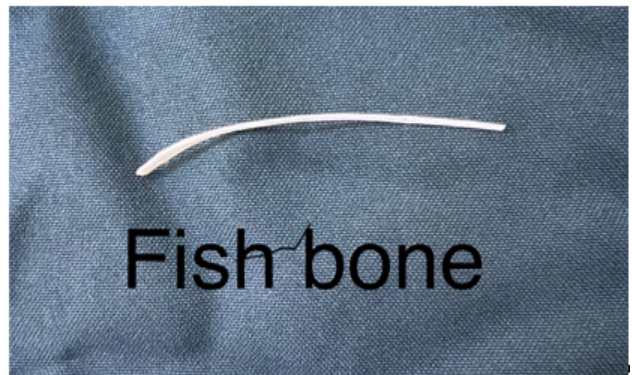


Figure 1: Fish bone.

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Figure 2: Inflamed appendicitis.



Figure 3: Traditional Iraqi grilled fish.

Introduction

A cute appendicitis casued by infectious either from bowel organisms as B.coli, or haematogenous spread, or obstruction of lumen of appendix by foreign body, such as parasite (Threadworms), vegetable (seeds, date stones), faecoliths (the commonest cause) [1] but we report appendicitis obstructed by foreign body (fish bone), patient had history of eating traditional Iraqi fish grilled (Masqouf) 4 days before.

Food that is not properly chewed cannot be easily digested by patient and can therefore lead to blockages and inflammation,[2]

Discussion

The cause of a appendicitis is always infection by viral, or bacterial infections [3].

Obstruction of lumen of appendix by foreign body (fish bone) is rare, the patient had history of eating traditional Iraqi fish grilled (Masqouf) 4 days before.

The fish bone is one of the rare cause of induced appendix and may be asymptomatic [4].

In our case, the fish bone induced acute appendicitis and it penetrate the appendix [5].

The diagnosis of acute appendicitis can be easily made in 60% of cases based on sign and symptoms [6], and physical examination, but in the other 7% of cases the diagnosis may be difficult, while the diagnosis is 60% in ultrasound and shown acute appendix [9].

Laboratory assessments show classically elevated WBC[7].

Conclusion

Fish bone Can cause acute appendicitis and induce The signs and symptoms of acute appendicitis[8]. So must taken good history of type of food taken by patient before surgery such as grilled fish (masqouf) in Iraqi patient.

The treatment is remove the fish bone first the appendectomy.

Ethical clearance- Taken

Source of funding- Self

Conflict of Interest - Nil

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Gross examination and Toxicological Analysis of Gastrointestinal Tract for Dichlorvos Poisoning Caused by Nuvan Insecticide During Post-Mortem Examination: A Case Series

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Abstract

Background: “Nuvan” is a trading name for Dichlorvos (DDVP) organophosphate insecticide. Nuvan contains 76% DDVP and is accessible in India. Nuvan Insecticide is highly misused as orally ingested in suicide attempts and is one of the leading causes of poisoning deaths in Indian rural areas.

Methods: In this case study, we have diagnosed the four poisoning deaths by Nuvan-dichlorvos insecticide through Post-Mortem examination and toxicological analysis. The gastro-intestinal tract (GIT) was grossly examined. The solvent extraction method is used for withdrawing pesticide content from GIT. Toxicological analyses were performed using thin-layer chromatography (TLC) using a spraying reagent

Results: A Fluorescent turquoise blue liquid content was found throughout the stomach to the small intestine. Content had a notable odor of volatile organic compounds (VOCs). The mucosal walls of the stomach were highly congested and hemorrhagic. Toxicological analyses done for all four cases showed a confirmatory detection of dichlorvos.

Conclusions: The simple gross examination of gastrointestinal viscera during post-mortem is supporting diagnostic evidence for orally administered Nuvan insecticide. Solvent extraction method is a suitable technique for the extraction of pesticides from aqueous biological matrices. Thin Layer Chromatography is a simple and inexpensive technique for chemical confirmation and DDVP was detected.

Keywords: Pesticide poisoning; Dichlorvos (DDVP); Forensic Toxicology; Thin layer chromatography (TLC); Nuvan insecticide; Post-Mortem Examination; Clinical Toxicology.

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Introduction

Organic phosphorus pesticides (OPs) are cholinesterase inhibitors that can reversibly or irreversibly bind with the serine residue in the active site of the enzyme acetylcholinesterase and prevent the normal functioning of neurotransmitters. This action is not limited to insects but can produce toxicity in animals and humans [1][2]. OP insecticides refer to phosphorus(P) containing compounds with various structural types including phosphates, that have four oxygen atoms surrounded by central Phosphorus (P) atom as Dichlorvos (DDVP) (Fig 1) [1][3]. DDVP is the dimethylated OPs that belong to the fourth class of phosphate pesticides, bonded with two methoxy groups [3]. Phosphoryl group of OP attaches to the active hydroxyl site of the acetylcholinesterase (AChE) and inactivates the enzyme which leads to the accumulation of excessive acetylcholine (ACh) at the cholinergic junction that disrupts the normal synaptic transmissions (Reaction 1) [1]. The inactive AChE enzyme also regenerates by removing the phosphate moiety attached to it by hydroxyl ion reaction and releases back the active enzyme (Reaction 2) [3-5]. But this regenerative process is much slower than inhibition and takes hours to days depending on the chemistry of the substituted phosphate [3,4]. Enzyme inactivated by Dimethylated OPs takes 0.7 – 86 hours to regenerate back [5]. During the inactive state, the enzyme is also prone to “aging” in which one alkyl side chain of the phosphoryl moiety is removed and leaves a hydroxyl group as a substitute (Reaction 3) [3,5]. “Aged” AChE cannot regenerate and this reaction occurs faster with enzymes that have been inhibited by dimethylated pesticides as in the case with DDVP ($t_{1/2} \sim 3.3$ hours) [3-5]. Therefore, oximes are only effective if given within 12 hours of poisoning by dimethylated OPs as inactive enzyme rapidly converts into aged enzyme before going into regeneration and produces aged-dimethylphosphoryl-AChE, generally resistant to oxime therapy [4,5]. Dichlorvos is defined by WHO as a class -b highly hazardous pesticide as it has a very low LD_{50} value for oral and dermal exposure [6]. Acute ingestions can become symptomatic quickly, onset the complications of aspiration and respiratory failure that causes the majority of deaths before medical assistance could be provided [3,7]. In addition

to the risk of occupational and environmental toxicity, pesticides are the trending method of suicide in rural areas and kill over 2,00,000 people annually [8-11]. In several countries, dichlorvos is prohibited to minimize suicidal, occupational, and accidental poisonings [12]. Dichlorvos insecticide is accessed in India with different trade names such as Agrovon 76, Agro 76EC, Divisol, Nuvan, Nuvasuls 76, Bangvas, DDVP, Divap, and D-aivisol [13]. Nuvan contains 76% of dichlorvos, the most common brand available in India, accessible even after the ban, and uncontrolled selling is threatening to life [1,14]. The frequency of toxic or fatal events in India suggests that they are still easily accessed [11,15]. In developing nations, Emergency medicine in hospitals lack clinical toxicological laboratories and such pesticidal poisonings are left unnoticed. As alternative blood AChE activity can indicate cholinesterase inhibitors, but cannot confirm the xenobiotic chemical compound while medications should be followed as per the type of pesticide poisoning [3,16,17]. For instance, Carbamates (CA) also cause cholinergic crises but are clinically indistinguishable from OP poisoning. Pralidoxime is the antidote to OP intoxication but is considered to be contraindicated in CA poisoning [18]. Also, the In-vitro half-life of human AChE after poisoning with dimethoxy OPs is 3.7 hours as compared to 31 hours in cases of diethoxy OPs [16]. Hence, the oxime therapy is time bounded for dimethoxy OPs [5]. Analytical extraction of pesticides from viscera or lavage is the first crucial step for analysis. Solvent extraction method is one of the best suitable techniques for the extraction of pesticide residues from aqueous viscera (GIT) and biological fluids such as gastric lavage/vomit [19]. Solvent extraction is dependent on the hydrophobicity and miscibility of compounds, hence polar and non-polar pesticides are extracted accordingly [20][21]. This study aims to simple, rapid, and inexpensive detection of DDVP in biological matrices.

Material and Methods

Four fatal cases with an alleged history of Nuvan insecticide and unknown substance consumption were autopsied. Three cases were brought dead without any prior treatment and one case was hospitalized. The admitted patient was on medical

assistance, underwent gastric lavage, intubated on a ventilator, Atropine and Pralidoxime IV were injected as per treatment protocol. During Post-mortem, the gastro-intestinal tract was grossly examined, sensed for odor, and photographs were taken. Toxicological analyses were performed for the identification of xenobiotic pesticidal compounds using TLC for dichlorvos (DDVP).

Toxicological Analyses

Chemical analyses were performed in all the above four cases. Analytes were extracted from the gastrointestinal tract, mainly from stomach matrices through the solvent extraction method via acetonitrile and hexane solvent^[22-24]. Acetonitrile is used as an aqueous phase (polar solvent) to extract Polar pesticides such as - DDVP ^[21,23-25]. Acetonitrile is highly efficient to extract hydrophobic substances containing polar groups from hydrocarbons and fatty matrices^[23,25]. 50 grams of macerated tissue with content was dissolved in 100 ml of acetonitrile, evaporated on a water bath for 30 minutes, and filtered through anhydrous magnesium sulfate. Anhydrous salt absorbs the residual water and evaporation enhances the analyte preconcentration^[23,24]. Extracted analyte solution was collected and further separated in a separating funnel. Adding hexane as a non-polar solvent (25ml) in the separating funnel has no influence on the acetonitrile phase in the aqueous phase, leading to decreasing the co-extraction of non-polar matrix components by salting out ^[22,24]. Shaking the funnel for 1-2 minutes (inverting the separating funnel approximately 5-6 times), this process allows thorough interspersions of extracted analyte to the aqueous phase, assisting mass transfer and allowing efficient partitioning^[26]. After 5 minutes of the resting period, both the phases get stable and partitioned in a funnel. The Acetonitrile layer was collected and passed through anhydrous magnesium sulfate and the final analyte sample was prepared. The final sample analyte was loaded on a silica gel TLC plate(10x10cm) and ran parallelly with dichlorvos standard (IS) in the solvent system n-hexane: ethyl acetate: methanol (7:1.5:1.5) for 30 minutes ^[27]. The developed TLC plate is sprayed with 1% phenyl hydrazine hydrochloride solution and, a yellowish colour spot ^[27]. Further sprayed with 10% hydrochloric acid turns the spot to red coloured as positive confirmation for dichlorvos^[27]. Toxicological analyses done for all four cases showed a confirmatory detection for dichlorvos.

Case Series

Case 1

A 48-year aged male was brought dead to emergency with the history and police intimation of self-ingested Nuvan insecticide. Gross examination of the GI tract revealed fluorescent turquoise blue coloured liquid content throughout the stomach and small intestine (Fig 1 A, B). Content had a notable odor of volatile organic compounds (VOCs). Stomach mucosal walls were highly congested and hemorrhagic (Fig 1C).



Figure 1 (Case 1): PM findings of the GI tract. (A) Stomach (B) Small intestine (C) Mucosal wall of the stomach

Case 2

A 52-year aged male was brought dead to the hospital with police intimation of insecticide poisoning. Gross examination of the GI tract revealed turquoise blue-coloured liquid content in the stomach, adhered to congested and hemorrhagic mucosal walls (Fig 2). Pungent odor of VOCs was sensed.



Figure 2 (Case 2): PM findings: The gross examined view of the stomach.

Case 3

A 38-year aged male was brought dead with a history of unknown substance uptake. PM examination showed turquoise blue coloured content in the stomach and upper abdominal cavity (Fig. 3A&B). The content was leaked to the abdomen through the perforated hole in the stomach wall (Fig. 3C). Pungent odor of VOCs was sensed.



Figure 3 (Case 3): PM findings (A) Open abdomen cavity (B) Stomach and content (C) Perforation in stomach wall

Case 4

22-year aged female was admitted to the hospital in an unconscious state with a history of unknown substance uptake. Patient suffered prolonged emesis, convulsions, and abdominal pain and died after a week on ventilatory support. The stomach and its mucosal walls were highly hemorrhagic (Fig. 4A). Dark bluish charred content was found adhered to the mucosal walls of the stomach (Fig. 4B).

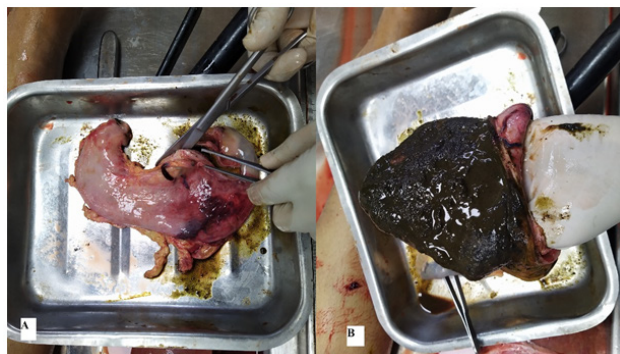


Figure 4 (Case 4): PM Gross findings of (A) Stomach (B) Adhered content to stomach inner linings of mucosal wall.

Results and Discussion

All four cases were reported from rural areas. The first three cases died before reaching the hospital and medical assistance could be provided. The prominent

cause of death is hypoventilation and pulmonary dysfunction, which can onset within two minutes after DDVP poisoning [28]. DDVP is a direct-acting OP compound that quickly inhibits acetylcholine enzymes without being metabolized in the body [3]. The inhibited AChE converts rapidly ($t_{1/2} \sim 3.3$ hours) into “aged” AChE (permanently irreversible) [5]. Clinically, this suggests that patients who admit to a hospital after 4 hours of poisoning with a DDVP, have 50% of their AChE irreversibly inhibited and after 14 hours, the patients become completely resistant to oxime treatment [16]. Therefore, Oximes should be given early within 2-4 hours and are effective only within 12 hours after intoxication [16] [10]. Therefore, cases 1,2, and 3 were brought dead as reported to the hospital after 14 hours of ingestion. Also, in case 4, the patient was brought after 4 hours of poisoning and did not survive, even intubated on a ventilator and medically treated. Also, the treatment doses of oxime are selective for dimethyl OPs. The reactivating potential of the oximes should be efficient and preventive for aged AChE. Reactivating potential of obidoxime for dimethylphosphoryl-AChE is considered superior to pralidoxime. Obidoxime is approximately 10-90 times more reactive than pralidoxime. Pralidoxime is effective as obidoxime if given at least five times a higher dose. In-vitro studies have shown that seven times as much pralidoxime as obidoxime is required for reactivation of dimethyl-OP inhibited AChE [29][30][5][4][16]. During Autopsy, stomach examination showed significant features of Nuvan insecticide poisoning in brought dead cases 1,2,3. The fluorescent turquoise blue coloured liquid content was found throughout the stomach to the small intestine was ingested Nuvan-dichlorvos insecticide. Therefore, an Orally ingested insecticide should be rapidly washed out from the stomach to inhibit further absorption in the body. In Case 4, the insecticidal content was found adhered to mucosal walls of the stomach, this suggested that lavage was incomplete and the patient suffered excruciating conditions on a ventilator for 7 days due to persistence of the OP that led to rapid re-inhibition of the reactivated enzymes [5]. Stomach mucosal walls were highly congested and hemorrhagic in all four fatal cases. Case 3 had a rare finding of stomach perforation, which suggests DDVP may

cause vascular endothelial dysfunction. Perforation was caused due to microvascular thrombosis by the contact of toxins with the mucosa for a longer duration^[31]. Solvents in the insecticide also contribute to mucosal erosions^[31]. Hence, the content found had an odor of volatile organic compound as of insecticide. Co-formulated solvents create toxicity and vary with OP and insecticidal brands^[3]. In the unavailability of Toxicological laboratories, all anti-cholinesterase poisonings are treated as the same, despite wide variation in their toxicity, fat solubility, metabolism, AChE selectivity, and ageing rate, which affect poisoning severity and response to treatment^[5]. Chemical analyses performed to detect dichlorvos using TLC is a simple inexpensive technique, and the solvent extraction method is efficient to withdraw pesticides from aqueous viscera and biological fluids (stomach wash and vomiting). Confirmation of OP compound is more reliable than plasma cholinesterase level for effective treatment^[10]. Development of Toxicology laboratories for such evaluation is essentially important for hospitals and forensic departments. Ministry of Agriculture and welfare, India (GOI) has prohibited the manufacture, import, and use of dichlorvos pesticide by year 2021-22 as it is highly hazardous, and uncontrolled regulations have led to deaths all over India^[32]. As small farmers and domestic users keep the stock they had before prohibiting laws were approved^[15]. Hence, there is possibility to encounter poisoning and fatal cases by banned pesticides, as the most cases reported by "Nuvan" insecticide. In all four cases, the Nuvan insecticide was orally ingested, and the gross examination and toxicological analyses of Gastro-intestinal tract is diagnostic evidence for insecticide poisoning.

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Conflicts of Interest: None

Ethical Clearance: The study is conducted under AIIMS institution and involves general medical duties, followed by routine procedures during post-mortem examination as per the work ethics of the institution. No further ethical clearance was required.

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Knowledge, Attitude of Mothers towards Infant Oral Healthcare in Baghdad City/ Al-Karkh

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Abstract

Background: Oral health is a key pointer of overall health, and quality of life, most oral health problems are preventable. Mothers, significantly impact their infant's oral health and play a vital role in prevention of dental caries among their children.

Aim of the Study: To evaluate knowledge, attitude of mothers towards infant oral healthcare in Baghdad city / Al-Karkh.

Patients and Methods: A cross-sectional study was conducted among convenient sample of 300 mothers with a child aged less than one year who were attending the primary healthcare centers in Baghdad city/ Al-Karkh. Data were collected using a self-administered questionnaire composed of questions regarding knowledge, attitude of mothers toward infant oral healthcare. The data analyzed using Statistical Package for Social Sciences (SPSS) version 25.

Results: In this study, 88 (29.3%) of participant mothers had good knowledge, which was significantly higher among the participant mothers aged ≥ 35 years (42.9%), live in urban areas (40.6%), highly educated (54.1%), employed (45.5%), had ≥ 3 children (41.3%), and mothers whose child aged ≥ 6 months (34.2%). 166 (55.3%) of mothers had good attitudes, which was significantly higher among the participant mothers aged between (30 - 34) years (83.3%), live in the urban areas (69.8%), highly educated (91.8%), employed (81.8%), had ≥ 3 children (65.1%), and mothers who had child aged ≥ 6 months (64.9%).

Conclusions: Mothers had fair knowledge, good attitude toward infant oral healthcare. Pediatric dentists and any health care professionals like pediatricians and family physicians who care for infant need to be trained to disseminate appropriate infant oral health care information and in the prevention of early childhood caries.

Keywords: Early childhood caries, Infant oral health care, Knowledge, Attitude,, Mothers.

Introduction

Dental caries is one of the most common, prevalent and chronic infectious diseases affecting infants and children⁽¹⁾. Early childhood caries (ECC) is a severe form of tooth decay affecting the primary

tooth of young children, and has a long-lasting harmful effect on the dental health⁽²⁾. The ECC caused by the complex collaboration of numerous factors such as diet, cariogenic bacteria most commonly *Streptococcus mutans* (SM), the host (tooth surface)

and time⁽³⁾. So, ECC attributed by several risk factors including; night time bottle-feeding, frequent and prolong breast feeding, consumption of high sugar diet, lack of parental receptiveness regarding their infant oral health, absence of access for dental care⁽⁴⁾. Right oral health throughout infancy is significant for the general health and well-being of a child, and is one of the structure blocks for a life free of disease⁽⁵⁾.

The primary concentration of infant oral health care is prevention of teeth diseases which should be started in infancy because poor oral hygiene and unsuitable infant feeding practices produce an environment that encourages the colonization of cariogenic bacteria *streptococcus mutans* in the infant's mouth.

Aim of the Study To evaluate knowledge, attitude of mothers towards infant oral healthcare in Baghdad city / Al-Karkh.

Pateints and Methods

Setting and design: A cross-sectional study was conducted at (5) primary healthcare centers which were chosen conveniently in (3) sectors for primary healthcare in Baghdad city/Al-Karkh.

The time of the study was extended from February 2022 -june2022.

Sampling and sampling size: A convenient sample size of 300 mothers who were attending the chosen primary health care centers in Baghdad city/ Al-Karkh, during period (February - June)2022. during routine visits for regular check-up and vaccinations of their children or for peditrics consultation.

Inclusion criteria: Mothers of child bearing age (according to annual statistical report of Ministry of Health in Iraq 2020) who had a child aged less than one year and Mothers who agreed to participate in the study and who completed the questionnaire.

Data collection: from March 2022 - May 2022 during the working hours for 3 days per week. Data was collected using a self-administered structured questionnaire, which was validated by community

and family medicine specialists and was pre- tested by the pilot study.

The questionnaire composed is of two main sections:- socio-demographic variables related to mother and child; child age, gender, presence or absence of child's primary teeth, type of feeding. Mother age, education, occupation and number of children. and Section two: - consist of 13 questions which sub divided into two parts: the Eight questions related to mothers' knowledge about infant oral health care including time to start cleaning infant mouth, dental caries causes and preventive measures and when to start use toothbrush. Also, the Five questions related to mothers' attitude toward dental caries risk including night-time bottle feeding, frequent and prolonged nocturnal breast feeding, sweetened liquids also attitude toward importance to clean the infant's mouth.

Statistical analysis: In the (knowledge subsection) each correct answer was given (one score) and each wrong answer (zero scores). total scores were represented in percentages. Assessing the level of knowledge. Data analyzed using Statistical Package for Social Sciences (SPSS) version 25. The data presented as mean, standard deviation and ranges. Categorical data presented by frequencies and percentages. Chi square test was used to assess the association between knowledge, attitude, and practice scores with certain information, while fisher exact test was used instead when the expected frequency was less than 5. A level of P - value less than 0.05 was considered significant.

Results

Socio-demographic characteristics

Participants' age ranged from 16 to 44 years with a mean of 28year and standard deviation (SD) of ± 6.01 years, 192 (64%) live in urban areas, 134 (44.7%) were with primary school level, and 212 (70.7%) were unemployed. All participant mothers had at least one child, 82 (27.3%) had one child, 92 (30.7%) had two children, while the remaining 126 (42%) had \geq three children (Table 1).

Table 1: Distribution of the participants by socio-demographic characteristics

Socio-demographic Characteristics	No. (n= 300)	%
Age (Years)		
< 25	96	32.0
25 - 29	64	21.3
30 - 34	84	28.0
≥ 35	56	18.7
Residence		
Urban	192	64.0
Rural	108	36.0
Educational Level		
Primary School	134	44.7
Secondary School	44	14.7
University or Higher	112	40.6
Occupation		
Employed	88	29.3
Unemployed	212	70.7
Number of Children		
1	82	27.3
2	92	30.7
≥ 3	126	42

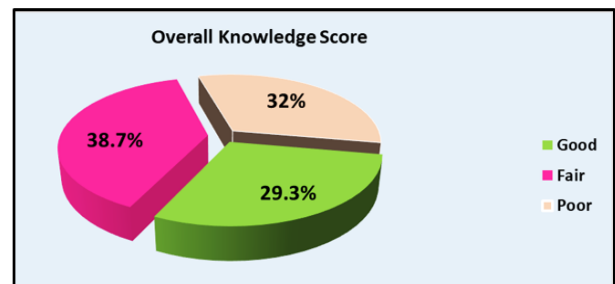
Age of the last child ranged from 1 to 12 months with a mean of 8.40 ± 6.01 months, and more than three quarters 228 (76%) were aged (6–12) months. Regarding child's gender, there were 180 males (60%), and 120 females (40%). In the present study, 236 (78.7%) of the participant mothers reported that their children were with erupted primary teeth, while the remaining 64 (21.3%) were without eruption of primary teeth. Mixed feeding with semisolid food was the most frequent type of feeding among 116 mothers (38.7%), followed by bottle feeding with semisolid food in 64 (21.3%), and breastfeeding in 54 (18%) of mothers (Table 2).

Table 2: Distribution of mothers by certain characteristics of their children

Infant's characteristics	No. (n= 300)	Percentage (%)
Age of Child (Months)		
< 6	72	24.0
6 - 12	228	76.0

Infant's characteristics	No. (n= 300)	Percentage (%)
Gender of Child		
Male	180	60.0
Female	120	40.0
Child's Primary Teeth Eruption		
Yes	236	78.7
No	64	21.3
Type of Feeding		
Breastfeeding & Semisolid Food	48	16.0
Bottle-feeding & Semisolid Food	64	21.3
Mixed Feeding & Semisolid Food	116	38.7
Breastfeeding	54	18.0
Bottle-feeding	8	2.7
Mixed Feeding	10	3.3

The overall knowledge score of the participant mothers about infant oral healthcare was 88 (29.3%) had good knowledge, 116 (38.7%) had fair knowledge, and the remaining 96 (32%) were with poor knowledge (Figure 1).

**Figure 1: Overall knowledge score towards infant oral healthcare.**

In this study, there was a statistically significant association ($P < 0.05$) between knowledge score and age of the participants, residence, educational level, occupation, number of children, and age of the last child. Good knowledge about infant oral healthcare was significantly higher among the participant mothers aged ≥ 35 years (42.9%, $P = 0.004$), live in urban areas (40.6%, $P = 0.001$), highly educated (54.1%, $P = 0.001$), employed (45.5%, $P = 0.002$), had ≥ 3 children (41.3%, $P = 0.014$), and mothers whose child aged ≥ 6 months (34.2%, $P = 0.001$), while gender

and infant's primary teeth eruption and showed no significant association ($P \geq 0.05$) with knowledge score (Table 3).

Table 3: Association of participant's knowledge score with certain sociodemographic characteristics

Socio-demographic Characteristics	Knowledge Score			Total (%) n= 300	P- value
	Poor (%) n= 96	Fair (%) n= 116	Good (%) n= 88		
Age (Years)					
< 25	52 (54.2)	28 (29.2)	16 (16.7)	96 (32.0)	0.004
25 - 29	16 (25.0)	32 (50.0)	16 (25.0)	64 (21.3)	
30 - 34	18 (21.4)	34 (40.5)	32 (38.1)	84 (28.0)	
≥ 35	10 (17.9)	22 (39.3)	24 (42.9)	56 (18.7)	
Residence					
Urban	20 (10.4)	94 (49)	78 (40.6)	192 (64.0)	0.001
Rural	76 (70.4)	22 (20.4)	10 (9.3)	108 (36.0)	
Educational Level					
Primary School	74 (55.2)	50 (37.3)	10 (7.5)	134 (44.7)	0.001
Secondary School	12 (27.3)	20 (45.5)	12 (27.3)	44 (14.7)	
University or Higher	10 (8.2)	46 (37.7)	66 (54.1)	122 (40.6)	
Occupation					
Employed	12 (13.6)	36 (40.9)	40 (45.5)	88 (29.3)	0.002
Unemployed	84 (39.6)	80 (37.7)	48 (22.6)	212 (70.7)	
Number of Children					
1	36 (43.9)	30 (36.6)	16 (19.5)	82 (27.3)	0.014
2	26 (28.3)	46 (50)	20 (21.7)	92 (30.7)	
≥ 3	34 (27.0)	40 (31.7)	52 (41.3)	126 (42.0)	
Age of Child (Months)					
< 6	42 (58.3)	20 (27.8)	10 (13.9)	72 (24.0)	0.001
6 - 12	54 (23.7)	96 (42.1)	78 (34.2)	228 (76.0)	
Gender of Child					
Male	66 (36.7)	68 (37.8)	46 (25.6)	180 (60.0)	0.069
Female	30 (25.0)	48 (40.0)	42 (35.0)	120 (40.0)	
Child's Primary Teeth Eruption					
Yes	78 (33.1)	87 (36.9)	71 (30.1)	236 (78.7)	0.466
No	18 (28.1)	29 (45.3)	17 (26.6)	64 (21.3)	

Regarding the overall attitude score, 166 mothers (55.3%) had good attitudes, and 134 (44.7%) had poor attitudes about infant oral healthcare (Figure 2).

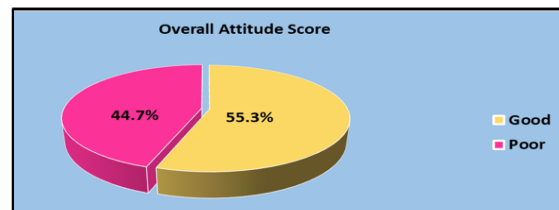


Figure 2: Overall attitude score about infant oral healthcare.

It was clear that the attitude score of the participants towards infant oral healthcare was significantly associated with age of the participants, residence, educational level, occupation, number of children, age of the last child. The proportion of good attitude was significantly higher among the

participant mothers aged between (30 - 34) years (83.3%, $P= 0.001$), live in the urban areas (69.8%, $P=0.001$), highly educated (91.8%, $P=0.001$), employed (81.8%, $P= 0.001$), had ≥ 3 children (65.1%, $P= 0.026$), and mothers who had child aged ≥ 6 months (64.9%, $P= 0.001$) (Table -4).

Table 4: Association of the participants attitude score with certain sociodemographic characteristics

Socio-demographic Characteristics	Attitude Score		Total (%) n= 300	P- Value
	Good (%) n= 166	Poor (%) n= 134		
Age (Years)				
< 25	26 (27.1)	70 (72.9)	96 (32.0)	0.001
25 - 29	42 (65.6)	22 (34.4)	64 (21.3)	
30 - 34	70 (83.3)	14 (16.7)	84 (28.0)	
≥ 35	26 (27.1)	70 (72.9)	56 (18.7)	
Residence				
Urban	134 (69.8)	58 (30.2)	192 (64.0)	0.001
Rural	32 (29.6)	76 (70.4)	108 (36.0)	
Educational Level				
Primary School	30 (22.4)	104 (77.6)	134 (44.7)	0.001
Secondary School	24 (54.5)	20 (45.5)	44 (14.7)	
University or Higher	112 (91.8)	10 (8.2)	122 (40.6)	
Occupation				
Employed	72 (81.8)	16 (18.2)	88 (29.3)	0.001
Unemployed	94 (44.3)	118 (55.7)	212 (70.7)	
Number of Children				
1	30 (36.6)	52 (63.4)	82 (27.3)	0.026
2	54 (58.7)	38 (41.3)	92 (30.7)	
≥ 3	82 (65.1)	44 (34.9)	126 (42.0)	

Discussion

This study reported that knowledge score of the mothers was good in 29.3%, fair knowledge in 38.7%, and poor in the remaining 32% as shown in (Figure 1).

A different result observed in Jaafar *et al.*, 2018 study in Lebanon, in which based on the total score category calculation the results showed that, most of the expected mothers (69.5%) had fair, while 17.4% had poor, and 13.1% had good knowledge^(6,7,8).

(Table 4) showed that good knowledge was significantly higher among the participant mothers aged ≥ 35 years ($P= 0.004$), live in urban areas ($P= 0.001$), highly educated ($P= 0.001$), employed ($P= 0.002$), had

≥ 3 children ($P= 0.014$), and mothers whose child aged ≥ 6 months ($P= 0.001$), while gender and infant's primary teeth eruption and showed no significant association with knowledge score ($P \geq 0.05$).

In Chala *et al.*, 2018 study in Morocco, the adjusted linear regression model showed that the knowledge score was significantly related to mother's age ($P < 0.001$), education level ($P < 0.001$)⁽⁹⁾.

Rossato *et al.*, study in Brazil, in 2021 reported that Mothers' knowledge score was associated with sociodemographic parameters, being those mothers aged from 20 to 29 years and with higher education who presented higher levels of oral health care knowledge⁽⁶⁾.

The reasons for these results might be related to that mother's knowledge toward infant health improves with more than one child and with increase child age as they become more experienced, also related to educational level of mothers as the higher the education the more they tend to seek knowledge. Living in urban areas mothers tend to have more contact with availability of doctors, PHC, and dentists. In this study as shown in (table 3), mothers said that most common medical problem suffered by child during teething was fever (80.7%), followed by gum biting or scratching and increasing saliva in 78.7% and 68.7% of mothers, respectively.

Regarding the overall attitude score in the present work, more than half had good attitudes (55.3%), and (44.7%) had poor attitudes about infant oral healthcare as shown in (Figure 4).

Also, in attitude response in Shinde *et al.*, 2018 study in India, almost all mothers had positive attitude toward their infant's oral care⁽⁷⁾. A discrepancy observed in Jaafar *et al.*, 2018 study in Lebanon, in which results showed that in regard to attitude score most of the expected mothers (69.5%) had fair, while 17.4% had poor, and 13.1% had good attitude score⁽⁸⁾.

The differences reported among attitude scores in above studies may have related to the difference in sample size or different study design and also to the difference in culture, environment, education, awareness of mothers toward infant oral health care. The current study (Table 7) observed that proportion of good attitude was significantly higher among those aged between (30-34) years ($P= 0.001$), live in the urban areas ($P= 0.001$), highly educated ($P= 0.001$), employed ($P= 0.001$), had ≥ 3 children ($P= 0.026$), and mothers who had child aged ≥ 6 months ($P= 0.001$).

Chala *et al.*, 2018 study in Morocco, observed that oral-health related attitudes were significantly related to the mother's employment status, having at least one child with a health concern and education level ($P<0.05$)⁽⁹⁾.

Jaafar *et al.*, 2018 study in Lebanon, observed that only educational level has a significant effect on the total score ($P<0.05$) there was no significant effect on the attitude score by age ($P= 0.568$)⁽⁸⁾, While mothers

who live in the urban areas, and mothers had a child aged ≥ 6 months, there are no other studies similar to this study that compared the attitude score with these parameters. The reasons for these results might be related to that mother's attitude toward infant oral health improves with increase child age as teeth tend to erupt, they become more experienced with increased number of children which may lead to better parental awareness of and attention to overall health, also higher educational level and being employed which allows for more sharing of information and experiences among colleagues.

Conclusions

Mothers had fair knowledge, good attitude toward infant oral health care. Also significant association was found between knowledge score of the participants towards infant oral healthcare and age of the participants, residence, educational level, occupation, number of children, and age of the last child being ≥ 6 months. as well as the significant association was found between attitude score of the participants towards infant oral healthcare with age of the participants, residence, educational level, occupation, number of children, age of the last child. The proportion of good attitude was significantly higher among the participant mothers aged between (30 - 34) years, live in the urban areas, highly educated, employed, had ≥ 3 children, and mothers who had child aged ≥ 6 months.

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Association Between Ligature Material, Ligature Mark and Survival Period in Suicidal Hanging Victims: An Autopsy-Based Study

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Abstract

Hanging is a quick and very effective method used to commit suicide. The ligature material used for hanging is one of the important factors that determine the type of ligature mark or the pressure abrasion. Cases were divided into two groups. Group I included 25 cases of non-survived victims of hanging Group II consisted of 25 cases of hanging that survived for varying periods before death. Association between ligature material, ligature mark and survival period in suicidal hanging victims were studied in detail. Victims who used a hard but pliable ligature material had 13 times more risk of death compared to a victim who used a soft ligature material. A person with a well-defined ligature mark had 15 times more risk of death when compared to a victim with a faint ligature mark

Keywords: hanging, ligature material, pressure abrasion, risk of death

Introduction

Hanging is a quick and very effective method used to commit suicide. World Health Organization on analysis found hanging to be the most frequent method of committing suicide in 56 countries¹. National Crime Records Bureau Report of 2012 stated that 37% of suicidal deaths is by hanging². The departmental statistics from the State Medico-legal institute of Kerala, Government Medical College, Thiruvnanthapuram for a period of 6 years from 2007 to 2012 had shown that around 22 to 29% of deaths among the total medico-legal postmortems conducted per year were due to hanging. It had been

observed that 15 to 16% of cases were brought down alive following attempted hanging but died before getting any treatment and only 1 to 2 % survived to reach a hospital. Hence survival after hanging is a rare event. A long survival and recovery are rarer. In the present scenario, we could see many of the victims of hanging were brought down immediately by relatives or friends and they might have survived long enough to reach the hospital and later expired while undergoing treatment.

Ligature material used for hanging the body is important and may vary from case to case. The ligature material used is one of the important factors that

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determine the type of ligature mark or the pressure abrasion. Different materials are used for hanging which may be varying in consistency. Soft ligature materials like dhoti, saree, shawl, bed sheet, towels, handkerchief etc. and hard but pliable materials like coir or synthetic rope, cable, wire, sacred threads, belt etc. are used by different victims. They are usually tied around the neck with a knot which may be seen anywhere in the neck.^{3,4,5,6,7,8}

Ligature mark is a pressure abrasion caused by the ligature material. A distinct ligature mark will not be seen if a soft ligature material is used. If a rough or patterned ligature like coir rope is used, mark will be distinct and patterned similarly.⁶ Ligature mark was non continuous in 80% of cases which were placed above the level of thyroid cartilage in 38% of cases and over and above thyroid cartilage in 32% of cases.⁹ The impression of the ligature will be more marked in a person with greater body weight, greater period of suspension and on using a thin and tough material as a ligature.^{5,8} The ligature mark may be faintly visible or not so prominent if the beard or a portion of the clothing intervenes between ligature and skin or when a soft material is used as the ligature.^{5,6,8,10} It may also be faint if the victim is rescued immediately and survives for some period before death.^{3,10}

Materials and Methods

The study was conducted in the Department of Forensic Medicine, Government Medical College, Thiruvananthapuram during the period January 2013 to June 2014. 50 cases were included in the study. Victims of both sexes were included in the study and their age range was between 13 and 88 years. Cases

were divided into two groups. Group I included 25 cases of non-survived victims of hanging Group II consisted of 25 cases of hanging that survived for varying periods before death. History and other details were collected from the police officer in charge of the concerned dead body, accompanying near relative and from clinical case records. The type and consistency of ligature material used for hanging and details of pressure abrasion were recorded in the proforma. Dissections were carried out by Modified Rokitansky procedure. Data were analyzed using SPSS (Statistical Package for Social Sciences) version 16

Observations and Results

Period of Survival

Table 1: Period of survival

Period of survival	Frequency	Percentage
Did not survive	25	100
<1 hour	4	16.0
1-3 hours	5	20.0
3-6 hours	3	12.0
6-12 hours	1	4.0
12-24 hours	4	16.0
1-2 days	1	4.0
2-3 days	1	4.0
3-7 days	5	20.0
7-12 days	1	4.0
Total number of non-survived victims (Group I)	25	100
Total number of survived victims (Group II)	25	100

Type of Ligature Used by the Victim

Table 2: Type of ligature used by the victims

Type	Group I (non-survived group)		Group II (survived group)	
	Frequency	Percentage	Frequency	Percentage
Saree	5	20.0	6	24.0
Shawl	1	4.0	8	32.0
Lungi/Dhoti	2	8.0	7	28.0
Bed Sheet	1	4.0	1	4.0
Coir Rope	8	32.0	1	4.0
Nylon Rope	8	32.0	2	8.0
Total	25	100.0	25	100.0

Consistency of Ligature Material

Ligature materials used were either soft or hard but pliable. Hard but pliable ligature material was used by most of the victims in Group I (non-survived group) (64%), and 36% of cases used soft ligature material. Most of the victims in Group II (survived group) used ligature material having soft consistency (88 %) and hard but pliable material was used by only 12% of cases.

Details of Pressure Abrasion Seen on the Neck

Continuity of Pressure Abrasion

Pressure abrasion (ligature mark) was either continuous or non-continuous. Noncontinuous pressure abrasion was seen in 80% cases of Group I (non-survived group) and 84% of cases in Group II (survived group). Continuous pressure abrasion was seen in 20% of cases in Group I (non-survived group) and 16% of cases in Group II (survived group).

Appearance Of Pressure Abrasion

In Group I (non-survived group), 92% of the

victims had a well-defined pressure abrasion and 8% showed faint pressure abrasion. Pressure abrasion was well defined in 44% and faint in 56% of the cases in Group II (survived group).

Location of Pressure Abrasion in Relation to Thyroid Cartilage

Ligature mark or pressure abrasion was either placed over and above the thyroid cartilage or above the thyroid cartilage. It was placed over and above the thyroid cartilage in 88% cases of Group I (non-survived group) and 80% of Group II (survived group). Only 12 % of cases in Group I (non-survived group) and 20% of cases in Group II (survived group) showed ligature mark above thyroid cartilage.

Chi Square test was done to find out the association between the consistency of ligature material, appearance of pressure abrasion and risk of death. The test had shown a significant association between outcome of hanging and the above-mentioned variables.

Table 3: External findings found significant in bivariate analysis

Factors	Category	Group I (non-survived)	Group II (survived group)	P value	OR (CI)
Consistency of the ligature	Hard but pliable	16	3	<0.001	13.07 (3.03-55.95)
	Soft	9	22		
Appearance of pressure abrasion	Well defined	23	11	<0.001	15 (2.8-75.9)
	Faint	2	14		

Discussion

Easily available materials from the vicinity were used as a ligature material by most of the victims. Hard but pliable materials like coir or nylon rope were used by most of the victims (64%) in Group I (non-survived group). Majority of the victims (88%) in Group II (survived group) used a ligature material having a soft consistency like shawl, lungi or dothi. These findings are consistent with observations made by various authors.^{5,7,9,10} Using a ligature of soft consistency could be the reason for varying periods of survival before death. According to Sharija et al, 48% of the victims used soft materials as ligature in

comparison to 62% in the present study⁹. Ligature mark in the neck is the principal external sign of hanging. Ligature mark in the form of a pressure abrasion was present in all the 50 study subjects. In Group I (non-survived group), non-continuous ligature mark was seen in 80% of cases and it was well defined 92% of cases in this group and faint in 8% of the cases. In 88% of cases, pressure abrasion was located over and above the thyroid cartilage and in 12% it was placed above thyroid cartilage. In Group II (survived group), non-continuous ligature mark was seen in 84% of the cases. The pressure abrasion was faint in 56% of the cases and well defined in 44% of cases and in 80% of the cases in Group II (survived

group), ligature mark was placed over and above the thyroid cartilage and in 20%, it was above the thyroid cartilage. In none of the cases studied, ligature mark was placed below the thyroid cartilage. Ligature mark is placed above thyroid cartilage in 80% of cases, at the level of thyroid cartilage in 15% and below thyroid cartilage in 5% of cases.^{5,10} Various authors had projected these observations earlier.^{4,5,6,8,9,10}

Victims who used a hard but pliable ligature material had 13 times more risk of death compared to a victim who used a soft ligature material. A person with a well-defined ligature mark had 15 times more risk of death when compared to a victim with a faint ligature mark. (Table 3). Such a finding has not been reported in literature.

Conclusion

Deaths due to hanging is very common but only very few cases are found to survive for varying periods before death. Survival after attempted hanging is a rare event hence the number of victims who survived for varying periods before death is also small. The limitation of the study is the small sample size due to limited availability of cases and the limited period available to conduct the study.

Hard but pliable materials like coir or nylon rope were used by most of the victims (64%) in the non-survived group. Majority of the victims (88%) in the survived group used a ligature material having a soft consistency like shawl, lungi, or dhoti. In the non-survived group, a well-defined ligature material was seen in 92% of the cases and it was non continuous in 80% of cases. In the survived group, a well-defined ligature mark was seen only in 44% of cases and it was faint in 56% of the cases. Most of the ligature marks were non continuous (84%). Chi Square test had shown that victim who had used a hard but pliable ligature material had 13 times more risk of death compared to a victim who used a soft ligature material and a person with a well-defined ligature mark had 15 times more risk of death when compared to a victim with a faint ligature mark.

Conflict Of Interest: We hereby declare that there is no conflict of interest

Source Of Funding: SELF

Ethical Clearance: Ethical Clearance Had Been Obtained From Institutional Ethical Committee Of Government Medical College, Thiruvananthapuram.

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Medical Ethics: From the eyes of Undergraduate Medical students, a Study Conducted in Vadodara

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Abstract

Medical Practitioners are guided and guarded by Medical Ethics as it provides various Do's and Don'ts for Medical Practitioners. Safe clinical practice is the universal motto as nowadays allegations are being increased against doctors. Knowledge of Medical Ethics and proper execution of principle of ethics can safeguard the clinical practice of doctors and can save them from allegations as well as from negligence charges. So a cross sectional observational study is conducted to assess the knowledge regarding medical ethics amongst undergraduate students of a medical college vadodara. A study questionnaire was prepared containing basic questions pertaining to Medical Ethics and that was pretested over 50 medical under graduate students as pilot study and was modified by amendments of different answer options of questions asked for better outcome. The study reveal that students are well aware about medical ethics but still there are areas involving ethical dilemma and virtue ethics require improvement for which students are keen to learn medical ethics more. Students opine that learning of medical ethics can enhance the clinical practice skills, competencies and can lead to better future clinical practice as well for patient care.

Key Words: Clinical Practice, Ethical Dilemma, Knowledge, Medical Ethics, Under Graduate Medical students.

Introduction

Medical Ethics deals with the moral principles which should guide members of the medical profession in their dealings with each other, their patients and the state¹. Ethical behavior is a self imposed duty upon each doctor. The medical profession is governed by legislation and by a code

of Ethics & Etiquette. Medical profession is bound by code of conduct prescribed by Medical Ethics. Medical Ethics provides various duties of doctors in their clinical practice which also includes behavior with the patients. WHO has stated earlier that as far as clinical practice is concern, ethics can be considered as heart or core part of the it².

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The code of medical ethics is the rules framed on the basis of the sense of moral values, to guide the conduct of all concerned³. Hippocratic Oath is the oldest code of medical ethics which is being followed till date⁴. Allegations against medical practitioners by patients or relative of the patients are quite common. A thorough and precise knowledge of Medical Ethics and proper implementation of relevant principles of ethics can safeguard the clinical practice of doctors and can save them from unnecessary accusations as well as from negligence charges. Apart from that, medical ethics describes various virtues imposed by medical practitioners which will be required to become skillful competent and efficient medical practitioner. Earlier the emphasis has also been made by government by including teaching of ethics in very first year of MBBS curriculum.

Materials and Methods

This cross sectional observational study was conducted amongst the undergraduate medical students of Parul Institute of Medical Sciences and Research, Parul University, Vadodara, Gujarat. Study includes medical students of final part I and part II MBBS as voluntary participation.

A study questionnaire was prepared containing 12 questions pertaining to Medical Ethics and which was pretested over 50 medical under graduate students as pilot study which was modified by amendments of different answer options of questions asked for better outcome. Informed written consent was taken and students were instructed not to reveal their identity. Total 298 students have submitted the questionnaire with their answers related to medical ethics and data was analysed for conclusion.

Results and Discussion

Sr. No	Question	Gender	Response of Students	
			Yes (%)	No (%)
1	Can you define Medical Ethics?	Male	112 (96.55)	4 (3.45)
		Female	177 (97.25)	5 (2.75)
2	Are you aware about "Virtue Ethics"?	Male	4 (3.4)	112 (96.6)
		Female	11 (6)	171 (94)
3	Are you aware about Infamous conduct?	Male	80 (68.97)	36 (31.03)
		Female	161 (88.46)	21 (11.53)
4	Do you know Hippocratic Oath?	Male	114 (98.28)	2 (1.72)
		Female	181 (99.45)	1 (0.55)
5	Are you aware about duties and rights of registered medical practitioner?	Male	104 (89.66)	12 (10.34)
		Female	174 (95.60)	8 (4.40)
6	Do you know Rule of Professional secrecy?	Male	107 (92.24)	9 (7.76)
		Female	176 (96.70)	6 (3.30)
7	Are you aware about negligence?	Male	101 (87.07)	15 (12.93)
		Female	171 (93.96)	11 (6.04)
8	Are you aware about the importance of consent in medical practice?	Male	114 (98.28)	2 (1.72)
		Female	180 (98.90)	2 (1.1)
9	Do think students should be sensitized about possible ethical dilemmas?	Male	116 (100)	0 (0)
		Female	182 (100)	0(0)
10	Do you agree that learning of ethics enhance the skills of medical practitioner and helps in safe clinical practice?	Male	115 (99.14)	1 (0.86)
		Female	182 (100)	0(0)
11	Are you willing to learn more about Medical Ethics?	Male	103 (88.79)	13 (11.21)
		Female	155 (85.16)	27 (14.84)
12	Do you support the thought of keeping a separate subject of "Medical Law and Ethics" in curriculum?	Male	55 (47.4)	61(52.6)
		Female	103(56.6)	79(43.4)

Total 298 students participated in the study. Out of which 182 were females and 116 were males and male to female ratio being 1:1.5. Female dominance in such higher education field has also been observed in other study⁵. 96.55% male participants and 97.25% female participants were aware about ethics. 68.97% male participants and 88.46% female participants were having knowledge of infamous conduct. Majority of students were not aware about virtue ethics. Thorough knowledge of virtues will produce virtuous physician which is the need of an hour. Virtues must be studied in detail in relation to clinical practice. Virtues like honesty, compassion, equality, transparency, kindness, team work and leadership have effect on moral dilemmas and their strict inclusion in curriculum will definitely help development of moral character which we look after in an "Ideal Doctor"⁶. There shall be problem base learning methods for teaching virtues to medical students and it can help them in moral decision making process when they will become physicians⁷.

98.25% male participants and 99.45% female participants were having knowledge about Hippocratic oath. Similar observation has been reported by other authors⁸. 89.66% male participants and 95.60% female participants know the rights and duties of registered medical practitioner. 92.24% male participants and 96.70% female participants stated that they know rule of professional secrecy. 97.07% male participants and 93.96% female participants confirm knowledge about negligence. This is in contrast to other study where only 10% students correctly answered about negligence⁹.

All the participants opined that various ethical dilemmas shall be sensitized to them in advance so they can tackle them when necessity arises. Ethical and moral dilemmas are going to be a part of clinical practice. The possibility of dilemmas can't be ruled out and yes the frequency of the same may be variable which has also been observed by other authors as well^{10,11}. A study also raised the concern of importance of awareness regarding various ethical dilemmas and their effects on career of a medical practitioner¹². 98.28% male participants and 98.90% female participants were aware about the importance of consent in medical practice. Importance of consent has also been observed by other study¹³. Nowadays

allegations against doctors are increased and social media may have also played the role for sensitization of regarding negligence cases.

99.14% male participants and all female participants stated that knowledge of ethics can enhance skills of medical practitioner as well as ethics will help in safe clinical practice. Education in medical ethics help in practicing medicine professionally also observed by other study^{14,15}. 88.79% male participants and 85.16% female participants stated that learning ethics is interesting and they are willing to learn more about ethics which has also been observed in other studies¹⁶. Such positive attitude for necessity of learning ethics and its importance has also been observed in similar studies^{17,18}. When participants were asked about adding up a separate subject of Medical Law and Ethics, mixed opinions were received. They are already coping up with many medical subjects so though they showed interest to learn ethics more but only half of the participants agreed upon a thought of inclusion of a separate subject in curriculum.

Conclusion

The study reveals that students are having fair knowledge about certain basic principles of medical ethics. In this era of digital & print media, students must have observed the amount of allegations against doctors and at the same time the education system is also stressing a lot about learning ethics for which various modules have been introduced. Ethics being taught in second year of MBBS and had been also a part of foundation course earlier. Students are also learning ethics from ATCOM Modules. So these can be the reason for the fair knowledge about medical ethics. There are still certain areas like ethical dilemmas, virtue ethics and areas regarding practical applicability of the principles of ethics require improvement which must be taught by problem base learning. Most of the student showed good interest in learning ethics more and they opine that learning ethics can help improve skills for practice of medicine and can help in safe clinical practice as well. This study more focused about the theoretical knowledge so for that a study with clinical case scenario shall be conducted which stimulate the actual execution of principles of ethics and how these students will be helped by knowledge of medical ethics.

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Strategies in Treating Pancreatic Pseudocyst

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Abstract

Aims: The goal of this study is to look into the inpatient outcomes of various treatment approaches for Pancreatic Pseudocyst (PP) and to assess the efficacy and complications of various treatment regimens.

Patients and methods: This research reports on a retrospective review of 125 patients with Pancreatic Pseudocyst who underwent treatment, whether medical or surgical, and their outcomes in a gastroenterology and hepatology teaching hospital / medical city / Baghdad-Iraq, between (2017 - 2021).

Results: The mean and standard deviation are used to represent the effects. The student t test was used to compare categorical variables. SPSS was used for all statistical research, and a p value of 0.05 was deemed statistically important. In our sample, 30.4 percent of cases received supportive care, while the remaining 69.6 percent received surgical intervention. In our sample, the most common surgical procedure was Cystogastrostomy (significant $p=0.05$). Cystojejunostomy was the surgical procedure conducted that had the fewest complications, as opposed to external drainage, which had a higher value (significant at $p 0.05$). The recurrence rate was strongly dependent on the treatment chosen for the underlying disorder. The resection surgery had the lowest recurrence rate, followed by Cystojejunostomy, while percutaneous drainage had the highest recurrence rate, followed by external drainage, with a p value of 0.05. There were no statistically significant variations in mortality rates between surgical interventions ($p=0.284$).

Conclusions: Asymptomatic pancreatic pseudocyst is treated conservatively, while infected or ruptured pancreatic pseudocyst necessitates external drainage. In the majority of cases, anastomosis of the pancreatic pseudocyst to the surrounding bowels, either CG or CJ, is performed with reasonable success.

Keywords: Strategies; Treating; treated conservatively; Pancreatic Pseudocyst.

Introduction

The pancreas is an abdominal organ that secretes several digestive enzymes (substances that enable and speed up chemical reactions in the body) into the pancreatic ductal system, which empties into the small

bowel, it also contains the Islets of Langerhans, which secrete several hormones, including insulin (that helps to regulate blood sugar).⁽¹⁾ Pancreatic pseudocyst (PP) are inflammatory fluid collections associated with pancreatitis and account approximately 80% of

pancreatic cystic lesions, they predominantly develop in adult men as a complication of alcoholic, biliary, or traumatic cause of acute pancreatitis^(2,3,4).

The fluid-filled cavity of pancreatic pseudocyst after acute episodes of pancreatitis that result in tissue necrosis or disruption of a pancreatic duct, according to the Revised Atlanta classification, as a pseudocyst should be characterized every acute pancreatic fluid collection that develops an enhancing capsule earlier than four week after onset of acute pancreatitis^(5,6). The communication with the pancreatic ductal system is initially always present and may further remain or seal off spontaneously during the clinical course⁽⁷⁾. Most pseudocysts present minor symptoms and are uncomplicated, the vast majority of pseudocysts (less than 6 cm) have thin wall and usually resolve spontaneously, while large pseudocysts are often in continuity with the pancreas, and thick-walled rarely communicate with the pancreatic ductal system^(4,7). Most large pancreatic pseudocysts are likely to remain requiring intervention only in the presence of complications (bleeding, infection, splenic vein thrombosis etc.), and obstructive symptoms of duodenum, bile duct, or stomach⁽⁸⁾. PP may result from an episode of acute pancreatitis, chronic pancreatitis, pancreatic trauma or extrinsic obstruction of the pancreatic duct^(9,10,11).The cyst can be filled with pancreatic juice containing amylase, lipase and zymogens or, if no communication with the pancreatic ducts exists, with protease-free serous fluid^(12,13). Pan et al 2015, proposed a new classification as in table (1) was devised based on the size, anatomical location, and clinical manifestations of the pancreatic pseudocyst along with the anatomical relationship between the pseudocyst and the pancreatic duct and the components of the classification⁽¹⁰⁾.

Table 1: New Classification Scheme of Pancreatic Pseudocysts

Type	Description of Pancreatic Pseudocyst
I	<5 cm and without complications, symptom, and neoplasia
II	Suspected cystic neoplasia

Type	Description of Pancreatic Pseudocyst
III	The Location of pancreatic pseudocyst is uncinata
IIIa	Pseudocyst communication with the pancreatic duct Without communication between pseudocyst and pancreatic duct
IIIb	
IV	Location of pancreatic pseudocyst is head, neck, and body
IVa	Exist communication between pseudocyst and pancreatic duct (1) Distance from the cyst to the gastrointestinal wall is <1 cm (2) Neither 1 nor 2
IVb	
IVc	
V	Location of pancreatic pseudocyst is tail
Va	Splenic vein involvement or upper gastrointestinal bleeding Distance from the cyst to the gastrointestinal wall is <1 cm, without splenic vein involvement or upper gastrointestinal bleeding.
Vb	

Most extrapancreatic pseudocysts are located in the body and tail region, whereas most intrapancreatic pseudocysts are in the head of the pancreas^(14,15). Pancreatic pseudocysts are most often retrogastric⁽¹⁶⁾. Blood-sustained ascites and abdominal fat necrosis have been explained by fluid escaping via the foramen of Winslow into the greater sac, and blockage of the foramen may cause the fluid to become “encysted” in the lesser sac^(17,18).

Patients and Methods

This study will report the results of a retrospective analysis of 125 patients diagnosed with pancreatic pseudocysts who underwent treatment, whether medical or surgical, and their outcomes in GIT and Hepatobiliary Teaching Hospital, Medical City, Baghdad, IRAQ between January 2017 and January 2021.

The demographic data were obtained (age and gender), with comparison between male and female according to the presence of pseudo pancreatic cyst

and its correlation with age of the patients. The common etiological and risk factors associated with formation of pancreatic pseudocyst secondary to acute and chronic pancreatitis also obtained in our study. The main clinical presentation including symptoms and signs associated with pancreatic pseudocyst also the laboratory data and imaging modalities were performed in our study for diagnosing pseudo pancreatic cyst and the complication of pancreatic pseudocyst were noticed in these patients group. The treatment options for pancreatic pseudocyst were performed whether conservative or interventional treatment and the postoperative complications were noticed during interventional treatment of pancreatic pseudocyst. All of the pancreatic pseudocysts in our sample with a disease course of >4 weeks had the mature cyst wall identified by computed tomography or transabdominal ultrasonography. Conservative management with supportive care and active definitive care with any type of surgical intervention were the two major aspects of management. Traditional surgical drainage (SD), percutaneous and endoscopic drainage (END), as well as the well-established watchful follow-up management, have all been assessed. Our study included supportive care with spontaneous resolution of pseudocysts, particularly for those who presented after an episode of acute pancreatitis, small pseudocyst size, intrapancreatic pseudocyst, pseudocyst of the head of the pancreas, persistence 6 weeks, and thin pseudocyst wall, and the majority of small pancreatic pseudocysts resolved spontaneously over time. The supportive treatment used in patients included tolerated oral intake, enteral low fat diet, as well as the addition of analgesics and antiemetic, however, the presence of symptoms such as pain, discomfort, vomiting, or frequent admissions for intravenous fluid resuscitation, as well as the development of complications such as infection, bleeding, or rupture in adjacent organs, was indicated for the implementation of interventional techniques. Rupture of adjacent organs, pseudocyst-related pain, biliary obstruction, gastric or duodenal obstruction, increasing size on follow-up, and pseudocyst bleeding were the most common reasons for pancreatic pseudocyst drainage. Percutaneous drainage (PD), endoscopic drainage (END), surgical internal drainage (SD), and excision are interventional techniques used in our hospital.

Intervention was postponed for up to 6 weeks after the pancreatitis episode in the absence of life-threatening events to allow the pseudocyst wall to mature and thicken, facilitating any type of drainage.

Percutaneous drainage (PD) was accomplished by inserting a drainage catheter into the pancreatic pseudocyst under ultrasound or CT guidance.

Endoscopic drainage (END) are another interventional method used in the treatment of pancreatic pseudocysts. They rely on a single space delineated between normal anatomic structures such as the stomach, duodenum, and transverse mesocolon, and since they were used in just a few cases in our research, they were not included in our results. The aim of endoscopic treatment was to attach the pseudocyst cavity to the gastrointestinal lumen, which was achieved using either a transpapillary or a transmural method, with the latter requiring access via the stomach (cystogastrostomy) or the duodenum (cystoduodenostomy). **Surgical internal drainage (SD)** was included in our study by suturing the posterior wall of the stomach to a pancreatic pseudocyst (pseudocystogastrostomy), while the other types of anastomosis have been rarely introduced, including pseudocystoduodenostomy and the pseudocystojejunostomy. The classical method entails a midline or subcostal incision, exposure of the lesser sac, biopsy of the pseudocyst wall, aspiration of pseudocyst fluid, breakdown of any multilocules, and finally anastomosis of the pseudocyst with the stomach, duodenum, or jejunum, depending on the surgeon's choice and anatomical condition at that time. When the pseudocyst was extended well into the transverse mesocolon to the most dependent portion of the pseudocyst, Roux-en-Y cystojejunostomy was used.

Resection of Pseudocyst was used as an alternative procedure to internal drainage for chronic pseudocysts. Resection was performed in our hospital by different operation methods including partial left-sided pancreatectomy, or by Whipple's procedure with pylorus-preserving pancreatoduodenectomy.

Laparoscopic techniques with pseudocystogastrostomy resulted in adequate internal drainage and minimal morbidity, it was only performed on a small number of patients.

External drainage (EXD) was used for immature cysts with infected contents and for ruptured cysts and during emergency laparotomy.

Postoperative management of pancreatic pseudocyst: Patients that had treated of a pseudocyst surgically is generally straightforward and follows standard treatment. Hospitalization as short as 1 to 2 days for endoscopic or laparoscopic procedures are performed in the elective setting or length of stay duration approximately 7-10 days following a complex, combined resection and drainag

Data analysis : The result was presented as the mean and standard deviation. The student t test was used to compare categorical variables. SPSS was used for all statistical research, and a p value of 0.05 was deemed statistically important.

Results

Males 68% and women 32% with a median age of 40 years (range 10-65). there were significant differences in regarding sex and age distribution at $p \leq 0.05$. The etiology was secondary to alcoholic pancreatitis in 47.2 percent of patients, blunt trauma in 12.8 percent, idiopathic in 4%, and biliary diseases in 36% of patients which was significant at $p \leq 0.05$. In our study 64 patients was presented with chronic pancreatitis (51.2%), while 61 patients was presented with acute form (48.8%) which is not significant at ($p=0.25$). The main symptoms of PP was abdominal pain in 95.2%, weight loss in 11.2%, postprandial fullness or early satiety in 44.8%, nausea and vomiting 77.6%, anorexia 22.4%, fever present in 13.6%, abdominal distension 72% and jaundice 4.8%. The predominant sign on physical examination was abdominal tenderness 96.8%, abdominal mass in the epigastrium in 90.4% and ascites 9.6%. The most obvious and significant symptoms and signs is abdominal pain and abdominal tenderness at $p \leq 0.05$. Regarding complications of the pseudocyst itself like infection was present in 32%, ascites 8%, intestinal

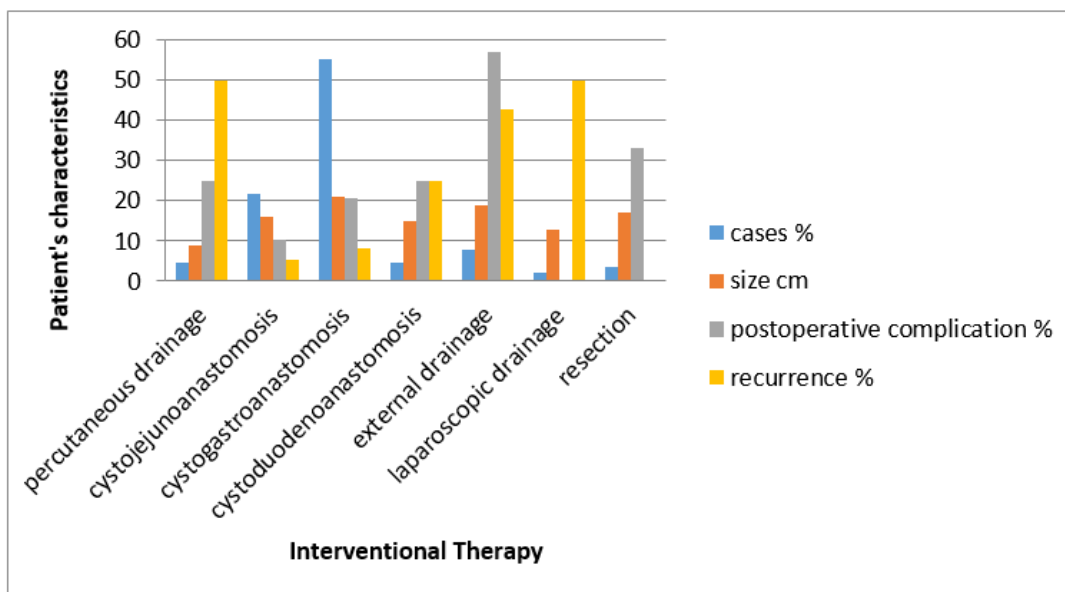
obstruction 5.6%, rupture 9.6%, hemorrhage 0.8%, the most significant complication was infection compared with other types of complication at $p \leq 0.05$ followed by rupture, ascites and intestinal obstruction. The investigations revealed hyperamylasaemia in 50% and increase ascetic amylase in 74%.

Radiological finding like computed tomography scans (CT) in all patients with sensitivity of CT in diagnosing pseudocysts ranges from 90-100% and abdominal ultrasound were performed on all patients with sensitivity in the detection of pancreatic pseudocysts was 84%. On the other hand MRI was done in 34.4% with sensitivity and specificity of 100% which provide more information in diagnosis and prediction of possible drainage. However the sensitivity of magnetic resonance cholangiopancreatography (MRCP) in our study varies, while endoscopic ultrasound (EUS) used less often and only as a diagnostic complement. Regarding postoperative surgical complications includes 12.6% developed a pancreatic fistula, 29.8% with wound infection, 3.4% with postoperative hemorrhage, 31% pain and 4% was non surgical complications, of which 4 were pneumonia, one cardiac arrhythmia and one pulmonary thromboembolism. Pain and wound infection were the most common postoperative complications, with pancreatic fistula coming in second at $p \leq 0.05$. The average size of a pancreatic pseudocyst was 18 cm (range 7-29 cm), and the most common position was the body and tail of the pancreas in 85 cases (68%) compared to the head and extrapancreatic (significant at $p \leq 0.05$).

The treatment selected for our study was supportive care in 30.4% of cases, while others 69.6% of cases was surgical intervention. The pseudocyst was resolved in 57.8% of patients treated with a non-operative procedure, with a satisfactory radiographic follow-up. In our study surgical intervention was performed in several ways. table (2) and figure (1).

Table 2: Interventional treatment, preoperative and postoperative characteristics in 87 patients with pancreatic pseudocyst

Interventional Treatment	Size in cm (range)	Postoperative complications	Recurrence	Mortality
<i>Percutaneous drainage</i> (n=4) / 4.6%	9	1 (25%)	2 (50%)	1
Surgical Internal Drainage				
Cystojejunostomosis (n = 19) / 21.8%	16	2 (10.5%)	1 (5.2%)	0
Cystogastrostomosis (n = 48) / 55.1%	21	10 (20.8%)	4 (8.3%)	0
Cystoduodenostomosis (n = 4) / 4.6%	15	1 (25%)	1 (25%)	0
<i>External drainage</i> (n = 7) / 8%	19	4 (57.1%)	3 (42.8%)	1
<i>Laparoscopic drainage</i> (n= 2) / 2.3 %	13	0 (0%)	1 (50%)	0
<i>Resection</i> (n = 3) / 3.4%	17	1 (33.3%)	0 (0%)	1
Total (n= 87) / 69.6%		(n=19) 21.8%	(n=12) 13.7%	(n=3) 3.4%

**Figure 1: interventional treatment, preoperative and postoperative characteristics in 87 patients with pancreatic pseudocyst.**

Cystojejunostomy was performed in 21.8% of the cases, cystogastrostomy in 55.1% of the cases, and cystoduodenostomy in 4.6% of the cases. Seven patients (8%) had external surgical drainage and 3.4% had resection, while 4.6% had percutaneous drainage and 2.3% had laparoscopic drainage. Cystogastrostomy was the most common surgical procedure in our study (significant at $p = 0.05$). As compared to external drainage, which had a higher complication rate, cystojejunostomy was the surgical technique with the fewest complications (significant at $p = 0.05$). The recurrence rate was strongly dependent on the underlying condition's treatment. The lowest recurrence rate was resection surgery, followed by cystojejunostomy, while the highest recurrence rate was percutaneous drainage, followed by external drainage, with a p value of 0.05. The mortality rates for all forms of surgical operation were not statistically relevant ($p = 0.284$).

Discussion

One of the most common complications that can arise after a pancreatitis episode is a pancreatic pseudocyst. In most cases, the pathophysiology is caused by a lesion or a change in the normal anatomy of the pancreatic duct^(19,20). The cause of pancreatitis is directly linked to the etiology of pancreatic pseudocyst; in 47.2% of cases, alcohol ingestion is the cause, followed by biliary disease in 36%. Abhishek and Karan 2019 and Sebastian et al 2017^(21,22) agree with our findings, which stated that the commonest etiological factor was alcohol which was present in 53.3% of the cases followed by biliary disease in 32%⁽¹⁾, whereas Gang et al 2015⁽¹⁰⁾ found that pseudocysts were mostly caused by biliary pancreatitis in 75.4% of cases followed by alcoholic cause, which contradicts our findings. Because of advancements in imaging techniques, the current prevalence of pancreatic pseudocyst is 48.8% in patients with acute pancreatitis and 51.2% in patients with chronic pancreatitis, Jose Luis et al 2015⁽²³⁾ agree with our study that the incidence was 55.2% associated with chronic pancreatitis and 44.8% linked with acute pancreatitis. According to⁽²⁴⁾ Yantting et al 2019 the prevalence of pseudocysts is higher in males between the fourth and fifth decades of life which agree with our study.

A diagnosis was made based on clinical, biochemical, and radiological findings⁽²⁵⁾. The clinical presentation varies, ranging from asymptomatic patients to those experiencing abdominal emergency symptoms as a result of complications. The most common symptoms recorded in this study were abdominal pain, early satiety, nausea, vomiting, weight loss, jaundice, and fever. There are currently no specific laboratory tests to diagnose pancreatic pseudocyst; however, up to 50% of patients in our study had persistently elevated amylase and lipase levels, which agrees with⁽¹⁹⁾ Udeshika et al 2018, while⁽²⁶⁾ Carolyn et al 2013 stated that an elevated amylase level is less specific because it can occur in a variety of other conditions. Mild leukocytosis and changes in liver function tests were also discovered. Despite the fact that most of our patients had elevated serum levels of the above-mentioned pancreatic enzymes, measuring them is a vital part of the diagnostic process and is thus recommended in our study, the other biochemical findings were non-specific. In terms of radiological studies, Christos et al 2018⁽⁴⁾ stated that transabdominal ultrasound is one of the most commonly used diagnostic tools in evaluating a pseudocyst due to its portability and ease of access, but it is operator dependent with non-reproducible results and imaging limitations such as overlying bowel gas, which we used to make the diagnosis⁽²⁷⁾. We also discovered that MRI and MRCP are the most accurate and sensitive diagnostic tools for evaluating the anatomy of the pancreatic duct. The most common sites of PP in our study were the pancreas' body and tail, which agrees with Bourilliere and Sarles' findings that most pseudocysts were found in or near the pancreas' tail⁽¹⁴⁾. Management strategies have evolved over time and will continue to do so⁽²⁸⁾. An asymptomatic pancreatic pseudocyst, regardless of size, position, or extension to neighboring structures, may be treated conservatively, according to the American College of Gastroenterology's 2013 guidelines for the management of pancreatitis. This is in contrast to previous reports, which suggested that the lesion should be drained if it was larger than 6 cm⁽²⁹⁾. According to these guidelines, invasive management of pancreatic pseudocysts should be used only if the lesion is causing symptoms or if it has spread to neighboring structures and is jeopardizing normal gastrointestinal physiology (infected

pseudocyst, bleeding, biliary obstruction or delayed gastric emptying)⁽³⁰⁾. Currently, management options include percutaneous, endoscopic, or surgical drainage, each with its own set of benefits and drawbacks. It's difficult to say which therapeutic drainage method is better than the others; however, the management option chosen will be based on the clinical features of the patient and, preferably, the anatomy of the pancreatic duct⁽³¹⁾.

Nealon and Walser defined a classification that took into account the existence of pancreatic duct stenosis or obstruction, as well as the communication of the pseudocyst to it. According to Park and Heniford⁽³²⁾, patient selection, the underlying cause of pancreatitis, the location of the pseudocyst, and the presence or absence of obstruction of the pancreatic duct are all important factors that will influence the drainage method's success. Surgery was the treatment of choice in our study; it is still considered the gold standard and is divided into three types: internal, external, and resection. Internal drainage may take place through contact between the pseudocyst and the stomach (cystogastroanastomosis), the jejunum (cystojejunostomosis), or the duodenum (cystoduodenostomosis)⁽³³⁾. The surgeon's preference, as well as the location of the pseudocyst and adjacent structures, will determine which of these techniques is used. If resection is chosen, the treatment will be determined by the position of the pseudocyst and can involve a distal pancreatectomy or even a pancreaticoduodenectomy, depending on the location of the pseudocyst.

Conclusion

Asymptomatic pancreatic pseudocyst is treated conservatively, while infected or ruptured pancreatic pseudocyst necessitates external drainage. In the majority of cases, anastomosis of the pancreatic pseudocyst to the surrounding bowels, either CG or CJ, is performed with reasonable success.

Conflict of interest: None

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A Retrospective Cross Sectional Study of Deaths Due to Hanging in Bilaspur Region of Chhattisgarh

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Abstract

A retrospective cross-sectional record-based study is conducted from December 2018 to November 2020 at Chhattisgarh Institute of Medical Sciences Bilaspur, Chhattisgarh. The study constitutes 8.5% (204 cases) of total 2398 autopsy done during the given period. The key objective of the study is to find out the prevalence of the problem within the study area and to determine factors associated with hanging cases. in which 79% (161) are male & 21% (43) are female, 59% (120) cases were married & 41% (84) cases were unmarried. High incidence of 39% (80) cases of age group between 21-30 years followed by age group 11-20 years constituting 21% (43) cases. Peak of cases are seen at the month of August and March (13%) cases. Most common ligature material used is gamchha in 28% (56) cases followed by nylon rope constituting 24% (50) cases.

Key words: Hanging, retrospective study, ligature material.

Hanging is a form of asphyxial death due to constriction of the neck as a result of suspension of the body by a ligature in the form of a noose applied in such a manner, when weight of the body or other part of the body, acts as a constricting force ⁽¹⁾. A deceased completely suspends from above, without touching the ground, is called complete hanging. When some part of body touches the ground, the procedure is called incomplete or partial hanging ⁽²⁾.

It is not necessary for ligature to completely encircle the neck to cause death ⁽³⁾. Death due to hanging is the majority causes of death in the world. ⁽⁴⁾. Prevalence is the proportion of a population who have a specific characteristic in a given time period ⁽⁵⁾. A retrospective study is study of using information on event that have been taken place in past, data has been gathered and stored from the register of record book ⁽⁶⁾. As per National Crime Record Bureau in 2019 there

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were 8316 incidences of abetment of suicidal cases in India (7). As per World Health Organisation close to 800,000 people die by suicide every year and is top 10 leading causes of death worldwide (8). However, in many cases of hanging, there are worries expressed by the relatives or investigating authorities about the manner of death in hanging and as to whether the hanging is actual or simulated one (9). Out of total autopsy conducted at CIMS hospital mortuary of Bilaspur district most cases are of suicidal deaths of which major chunk of cases are of suicidal hanging death. Homicidal and accidental hanging cases are rare in the Bilaspur region. Judicial hanging cases are also rare now a days as judicial hanging is converted to life time imprisonment by court on mercy appeals by the convicts.

Aims & Objective

- 1.) To find out the profile including gender, age groups, marital status, the place of occurrence of the incident, ligature material used.
- 2.) To determine the ongoing trends of deaths due to hanging in Bilaspur region of Chhattisgarh state over the period of the study

Materials And Methods

It's a retrospective cross-sectional study based on records. The study's data was gathered and evaluated from all hanging autopsies conducted at the Department of Forensic Medicine and Toxicology, CIMS, Bilaspur (C.G.) during period of December 2018 to November 2020. Information regarding age, gender, hospital stay, marital status, time of incidence, material used was gathered and analysed from the data available in the Departmental record.

Results

- A total of 2395 autopsy were conducted in the department during the period of December 2018 to November 2020 of which hanging contributed to 204 (8.5%) cases.
- In our study age group below 10 year a single case of hanging is reported which was homicidal in nature and extreme age group was 93 years old male.

- High incidence is seen in age group between 21-30 years 80 (39%) cases followed by age group 11-20 years constituting 43 (21%) cases. (Table 1)

Table 1: Age & gender distribution of cases of hanging from Dec 2018 to Nov 2020

Age in Years	Male	Female	Total
01 TO 10	01	0	01
11 TO 20	29	14	43
21 TO 30	61	19	80
31 TO 40	29	05	34
41 TO 50	17	02	19
51 TO 60	13	03	16
61 TO 70	07	0	07
71 TO 80	01	0	01
81 TO 90	02	0	02
91 TO 100	01	0	01
TOTAL	161	43	204

- During the given period 161 cases (79%) are male & 43 cases (21%) are female, (Chart - 1)

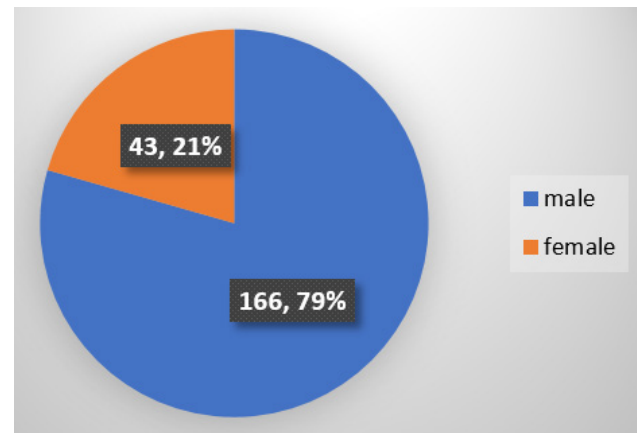


Chart 1: Number of male and female in cases of hanging from Dec 2018 to Nov 2020

- 120 cases (59%) were married & 84 cases (41%) were unmarried. (Chart - 2)

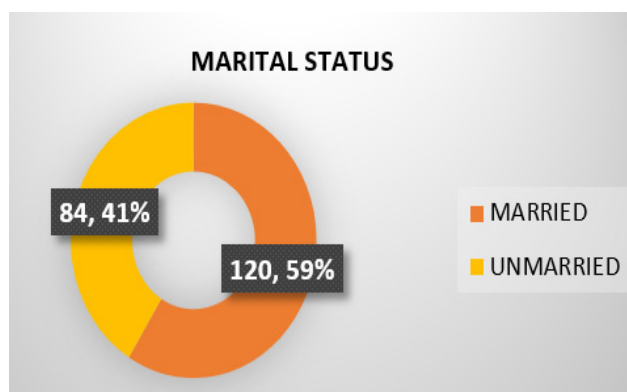


Chart 2: Number of married and Unmarried in cases of hanging from Dec 2018 to Nov 2020

- All cases of hanging were suicidal except one case of 5year old boy which was homicidal. Out of total of hanging 5 cases were of hospital death maximum survival period was 15 days.
- Peak of cases are seen at the month of August 27 cases (13%) & March 26 (13%). **(Table- 2)**

Table 2: Monthly distribution of cases of hanging from Dec 2018 to Nov 2020

MONTH	2018	2019	2020	TOTAL
JANUVARY	0	07	03	10 (5%)
FEBURARY	0	07	08	15 (7%)
MARCH	0	14	12	26 (13%)
APRIL	0	07	06	13 (6%)
MAY	0	09	09	18 (9%)
JUNE	0	09	12	21 (10%)
JULY	0	10	08	18 (9%)
AUGUST	0	13	14	27 (13%)
SEPTEMBER	0	10	08	18 (9%)
OCTOBER	0	06	08	14 (7%)
NOVEMBER	0	04	05	09 (4%)
DECEMBER	06	09	0	15 (7%)
TOTAL	06	105	93	204

- Most common ligature material used is gamchha in 56 cases (28%) followed by nylon rope constituting 50 cases (24%) **(Table- 3)**. Most deaths occur at night at home

Table 3: Distribution of ligature material used in cases of hanging from Dec 2018 to Nov 2020

LIGATURE MTRIAL USED	NUMBER OF CASES
GAMCHHA	56 (28%)
NYLONE ROPE	50 (24%)
OTHER MATERIAL (SAREE, DUPATTA, WIRE, BED SHEET)	98 (48%)
TOTAL	204

Discussion

Hanging is a choice of method for suicidal purpose all over country, mostly cases of hanging are suicidal in nature however occasionally accidental and homicidal are extremally rare

In the present study total number of hanging cases conducted were (8.5%) cases, studies are similar (10.00%) cases as study of Nikhil S Jagtap et al ⁽¹⁰⁾, but not as such (5.74%) study of Harshwardhan Khushalrao Khartade et al ⁽¹¹⁾ and (4.65%) Patel A P et al ⁽¹²⁾.

In our study 79% are male and 21% are female that correspond to study of Nikhil S Jagtap et al ⁽¹⁰⁾, study of Kanak Chandra Das et al ⁽¹³⁾, BL Chaudhary et al ⁽¹⁴⁾ but differ in study of Ahmad M et al ⁽¹⁵⁾ and Manoj Kr Baishya et al ⁽¹⁶⁾.

In our study majority of cases between 21-to-30-year age group that also correspond to Ahmad M et al ⁽¹⁵⁾, Manoj Kr Baishya et al ⁽¹⁶⁾, Patel A P et al ⁽¹²⁾ all the study show similar observation due to failures in overcoming stress and demands of life, depression going to favour feeling of worthlessness that such measures to end life.

In our study one case below 10 years that correspond to the study of Dinesh Rao ⁽¹⁷⁾, Ahmad M et al ⁽¹⁵⁾, very rarely encountered as a suicidal hanging mostly they are homicidal or accidental in nature.

In our study most cases are found in march and august month in Bilaspur region that vary study of Pradeep Kumar Mishra et al ⁽¹⁸⁾.

In present study gamccha (towel) was most common ligature material followed by nylon rope which differ from study of Harshwardhan Khushalrao Khartade et al ⁽¹¹⁾ as their study states odhani was most common followed by nylon rope, study of Nikhil S Jagtap et al ⁽¹⁰⁾, Manoj Kr Baishya et al ⁽¹⁶⁾, Kanak Chandra Das et al ⁽¹³⁾ states that commonest choice of ligature material used was nylon rope but the study of Ahmad M et al ⁽¹⁵⁾, Patel A P et al ⁽¹²⁾ state dupatta was most commonly used as ligature material, all the study show whatever ligature material is available near by used as a ligature material these difference are because of intensity of impulse and mental status of the person.

In our study suicidal place was home that are also found in study of Manoj Kr Baishya et al ⁽¹⁶⁾, Sachin S Sonawane et al ⁽¹⁹⁾, Harshwardhan Khushalrao Khartade et al ⁽¹¹⁾.

Conclusion

Hanging is a most common cause of suicide in our society. Bilaspur District in Chhattisgarh is a rapidly growing city in terms of economy infrastructure and population. Suicide by hanging is also on the increasing side due to lack of understanding and social stigma surrounding mental health. Excessive alcohol and cannabis addiction in men is the cause of potentially harmful physical, emotional, economical, and social consequences.

Causes of deaths as reported according to PM inquest form:

- Family dispute,
- Substance abuse (Alcohol/Cannabis),
- Interpersonal conflict between couple,
- financial problem,
- Depression & Anxiety,
- Long term disease,
- Loneliness,
- Miscellaneous.

Recommendations:

- Elder should accept responsibility for consoling youngsters during tough moments.
- Members of the family should keep a close watch on the individual who has been affected.

- The individual should seek psychiatric counselling and consultation.
- De-addiction campaign and public awareness campaign
- The creation of suicide prevention programmes, and also their proper implementation, is essential.
- The involvement of non-governmental organizations (NGOs) and social welfare organizations may help to raise public awareness. regarding the issue of interest.

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Green-Blue Discolouration of Brain at Autopsy: A Case Report

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Abstract

Methylene blue is a solid; its water solution is deep blue. It has been described as “the first fully synthetic drug used in medicine.” Methylene blue was first prepared in 1876 by German chemist Heinrich Caro. It is on the World Health Organization’s List of Essential Medicines. It has been increasingly used in the management of refractory distributive shock. A 16 years old boy following liver transplantation developed septicemia. During autopsy when dissecting brain, grey matter showed colour change from grey to green-blue in a few seconds. Green-blue discolouration of brain was an incidental finding in this case and when back referred it was found that young male developed acute liver failure and had undergone liver transplantation. Following transplant rejection he developed refractory hypotension, septic shock and multiple organ dysfunction syndrome. So in that critical condition methylene blue was given which is an effective drug for refractory shock.

Key words: Acute liver failure, liver transplantation, refractory hypotension and sepsis, methylene blue, green-blue discolouration of brain.

Introduction

Methylene blue is a reduction agent traditionally used in the treatment of methemoglobinemia, however, it has been increasingly used in the management of refractory distributive shock. Its mechanism of action is based on the inhibition of the nitric oxide-cyclic guanosine monophosphate pathway leading to the increased vasomotor tone in the arterioles^{1,2}. It is an organic chloride salt and a formal derivative of phenothiazine. It contains 3,7-bis (dimethylamino) phenothiazine -5-ium. It is a commonly used dye, but also exhibits antimicrobial, antioxidant, antimalarial, cardioprotective and neuroprotective

actions. Synonyms are basic blue, swissblue, uroleneblue, solventblue, methylthioninium chloride^{3,4}. “Pistachio” or “avatar” green-blue discolouration of brain is a phenomenon associated with methylene blue⁵.

Case report

A 16 years old boy who was apparently normal without any co-morbidities developed symptoms including vomiting and tiredness in the evening after returning home from school. There were two episodes of vomiting. The vomitus was black in color. He was treated on outpatient basis in a local hospital

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with intravenous fluids and supportives. His initial investigations including LFT (Liver Function Test) were normal apart from Leucopenia in complete blood count. As he became symptomatically better; got discharged and went home. But the symptoms persisted and he had multiple episodes of vomiting for two days and got admitted in hospital and this time his repeat LFT was deranged (LFT: AST/ALT/ALP=5031/2575/557). Next day he developed altered sensorium and diagnosed with acute fulminant hepatic failure and referred to a higher centre. As he had hypotension, sinus tachycardia, SPO₂ 96%, grade 3 hepatic encephalopathy and severe acidosis; elective intubation was done at casualty of higher centre. Because of acute fulminant hepatic failure and hepatic encephalopathy; liver transplantation with cadaveric liver was done on the very next day after several investigations and evaluations.

After a week of transplantation he developed refractory hypotension and subsequently septic shock and hypovolemic shock. In spite of all resuscitative measures he succumbed to death 2 weeks after development of initial symptoms. Since it was a case of post liver transplantation death of a young male with acute hepatic failure of unknown etiology (? drug/toxin induced); body was kept for medico-legal autopsy.

Postmortem examination was conducted on next day in the mortuary wing of Department of Forensic Medicine, Government Medical College, Thiruvananthapuram. External examination revealed yellowish discolouration of sclerae, violaceous discolouration with swelling on inner four toes of right foot and inner two toes of left foot. Both lower limbs were oedematous. Surgical wounds of transplantation procedure were present over abdomen. Internal examination findings were suggestive of multiple organ dysfunction and septicemia. The transplanted cadaveric liver was enlarged and yellowish. On dissection the brain appeared normal initially, but on exposure to air the colour changed to green-blue especially on cortical and sub-cortical grey matter areas [Fig.1, 2&3].

Blood and brain samples were collected and sent for culture to Microbiology Laboratory and the report revealed vancomycin resistant enterococci in blood

and scanty growth of Klebsiella in brain tissue. Histo-pathological examination showed extensive necrosis of transplanted cadaveric liver with portal and lobular mild inflammation composed of lymphocytes and neutrophils. Other findings were suggestive of multiple organ dysfunction syndrome. Perusal of records revealed administration of methylene blue intravenously to treat refractory shock was the reason for green-blue discolouration of brain at autopsy.



Fig. 1: Green-blue discolouration of brain surface.



Fig. 2 & 3: Green -blue discolouration of dissected brain on exposure to air.

Discussion

Methylene blue (Methylthioninium chloride) is an organic chloride salt having 3,7-bis (dimethylamino) phenothiazin-5-ium as the counterion¹. It has a role as monoamine oxidase inhibitor, acid-base indicator, a fluorochrome, an antidepressant, a cardioprotective agent, cholinesterase inhibitor, a histological dye, guanylate cyclase inhibitor, an antioxidant, an

antimicrobial agent, a neuroprotective agent, a physical tracer and an antimalarial. The intravenous form of methylene blue is approved by the FDA for the treatment of paediatric and adult patients with acquired methemoglobinemia. Other clinical applications of methylene blue include improvement of hypotension associated with various clinical states, an antiseptic in urinary tract infections, treatment of hypoxia and hyperdynamic circulation in cirrhosis of liver and severe hepatopulmonary syndrome, and treatment of ifosfamide induced neurotoxicity³. It has been described as “the first fully synthetic drug used in medicine.” Methylene blue was first prepared in 1876 by German chemist Heinrich Caro. It is on the World Health Organization’s List of Essential Medicines. Its use in the treatment of malaria was pioneered by Paul Guttman and Paul Ehrlich in 1891. It was discovered to be an antidote to carbon monoxide poisoning and cyanide poisoning in 1933 by Matilda Brooks⁴.

Mechanism of action: It inhibits the enzymes nitric oxide synthase and guanylate cyclase. By inhibiting the nitric oxide guanosine monophosphate pathway, it increases the vasomotor tone of arterioles; also it increases mean arterial blood pressure through an increase in cardiac index and systemic vascular resistance. So it is used in hypotension and refractory shock. Also it increases the partial pressure of oxygen. So it is used in cases like hepato-pulmonary syndrome, anaphylaxis etc. Since it is a cation it binds to negatively charged particles like nucleus. Since the grey matter has mainly neuronal cell bodies bluish discoloration is seen in grey matter. The pistachio or avatar discoloration occurs when the colourless metabolite leucomethylene blue is oxidized to methylene blue upon the exposure to atmospheric oxygen^{1,4}.

Uses⁴

1. Methemoglobinemia: It is an effective antidote because of its own oxidizing property. Oxidizes NADPH forming a reduced product leucomethylene blue which reduces heme group from methemoglobin to hemoglobin.
2. Cyanide poisoning: Since its reduction potential is similar to that of oxygen and can be reduced by components of Electron

Transport Chain (ETC), large doses are used as an antidote.

3. Ifosfamide toxicity: Methylene blue was first reported for the treatment and prophylaxis of ifosfamide toxicity. Here the toxic metabolite Chloroacetaldehyde (CAA) disrupts mitochondrial respiratory chain leading to accumulation of NADH. Methylene blue acts as an alternative electron acceptor and reverses NADH inhibition of hepatic gluconeogenesis and also inhibit the formation of CAA.
4. Dye or Stain:
 - Chromoendoscopy - to identify dysplasia
 - Urinary tracts - to identify any leak
 - Sentinel lymph node dissection - to visualize the lymphatic drainage
 - Fistulas, pilonidal sinus - to identify the tracts
5. To treat septic shock and anaphylaxis
6. To increase blood pressure in people with vasoplegic syndrome (redistributive shock), but has not been shown to improve delivery of oxygen to tissues or to decrease mortality
7. Has been used in calcium channel blocker toxicity as a rescue therapy for distributive shock unresponsive to first line agents.

Side effects⁴

- Cardio vascular system: Hypertension, precordial pain
- Central nervous system: Dizziness, mental confusion, headache, fever
- Dermatologic: Staining of skin, injection site necrosis
- Gastro intestinal tract: Faecal discoloration, nausea, vomiting, abdominal pain
- Genito-urinary tract: Discolouration of urine, bladder irritation
- Haematological: Anaemia.

Differential diagnosis⁷

- Hydrogensulphide poisoning: Affects all internal organs

- Hyperbilirubinemia: Yellowish or greenish in colour and no relation with exposure to air.
- Putrefaction of the body: Along with greenish discolouration of organs there will be other evidences of putrefaction also.

Green-blue discolouration of brain was an incidental finding in this case and when back referred it was found that young male developed acute liver failure and had undergone liver transplantation. Following transplant rejection he developed refractory hypotension, septic shock and multiple organ dysfunction syndrome. So in that critical condition methylene blue was given which is an effective drug for refractory shock. Similar findings were observed in various previously published case reports. In an article published by Linda and Kyle (2016), the authors have described green-blue discolouration of serosal surfaces in autopsy of a 68years old man, admitted for abdominal pain and distention; who undergone surgery 3days prior, during his short hospital stay, developed sepsis which was treated with methylene blue⁵. Another case was reported by Afzal A et al (2020) in which the authors described a 58years old male who died of septic shock due to *Pseudomonas aeruginosa* bacteraemia secondary to acute folliculitis and epididymo-orchitis. He was given methylene blue for reversal of septic shock but he did not respond and expired. Autopsy findings were significant for bluish-green discoloration of organs, especially the heart, lungs, and brain during prosection secondary to methylene blue. This accumulation was in a dose related fashion and the discolouration increased from green to turquoise blue as the organs were set on the table for dissection⁶. In yet another case report by Carlos Durao et al (2020) greenish-blue discoloration of the brain and heart was observed during the autopsy of a 63years old woman who had been treated with methylene blue for septic shock following a traffic accident⁷. Dumbarton et al (2012) reported a case of tissue ischaemia in a patient with refractory shock, led to distal digital necrosis due to methylene blue extravasations which might be the reason for violaceous discolouration and swelling of toes found in the present case⁸.

Conclusion

Even though methylene blue associated discolouration of brain is a rare entity; timely identification of such a possibility and differentiating them from other changes may help to avoid unnecessary investigations and dilemma during postmortem examination of such cases.

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Effect of COVID-19 on Psychological State of Elderly Patient at Jazan Community

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Abstract

Coronavirus disease 2019 (COVID-19) is a respiratory syndrome, amongst a larger family of ribonucleic acid (RNA) viruses, that has infected humans, causing unprecedented numbers of deaths and substantial psychological distress across the globe.

Aim: effect of COVID-19 On psychological state of elderly patient At Jazan. This research was applied on 125 respondents selected from Jazan community. We used the electronic questionnaire to reach them. The study findings are, respondent gender from female gender, Saudi nationality, 53% a suspected injury, Confirmed injury by 27%. The 56% of respondents psychological feeling after contracting the virus is supported by those around them, and only 20% feel depressed. Else the finding indicate to the feeling of the respondent family and those around him after he were infected with the virus is They feel psychologically supported by 41% and most of them receive the necessary health care after they contract the virus. This study **concluded** that nearly one-fourth of the sampled general population experienced moderate to severe psychological impact. Following specific precautionary measures appeared to have a protective effect on the individual's mental health. The findings can be used to construct psychological interventions directed toward vulnerable populations and to implement public mental health strategies in the early stages of the outbreak. This study **recommended**, Establish strategies to enhance elderly patient of healthy lifestyle by applying this study on a large sample in various region and accessibility to medical resources and the public health service system should be further strengthened and improved.

Keywords: COVID-19, Elderly, Psychological health

Introduction

The world is suffering from changes caused by COVID-19. Given the argument that the new division of history should be pre- and post-COVID-19 ^[1], humanity is adapting to a new way of life in a new

era to take preventive measures for nations and individuals. Since the discovery of the first infected case in Wuhan, China, in December 2019, COVID-19 has spread beyond China and Asia and throughout the world, causing an unprecedented public health crisis. Shortly after declaring COVID-19 as a "public

health emergency of international concern (PHEIC)" on 30 January 2020, the World Health Organization (WHO) declared it a "pandemic," an infectious disease at its highest risk, on 11 March 2020 [2,3].

While the early spread in China and East Asian countries have recently slowed down to some degree, the number of confirmed cases and deaths in Europe and the United States has been rapidly increasing since the end of February. Moreover, because COVID-19 has spread to developing countries with relatively poor health conditions, inadequate public healthcare access and information dissemination, and limited (often substandard) medical infrastructure and available professional services, medical supplies, and proper treatment facilities (e.g., several countries in South America, Africa, and Asia among other regions), the pandemic is expected to linger for an unknown period until effective treatments are developed and the supply, distribution, and skilled application are achieved and stabilized over an appropriate time. The widespread occurrence of infectious diseases, such as COVID-19, is closely related to symptoms of psychological distress, mental illness, and physical pain [4].

Furthermore, previous experiences of infectious diseases have shown that the number of people mentally affected by the pandemic exceeds the number of those physically infected by the disease, indicating the massive influence of such disease on mental health [5]. As demonstrated during (Middle East respiratory syndrome) MERS and severe acute respiratory syndrome (SARS), for example, pandemics had a significantly adverse effect on people's mental health. Due to the outbreak of the (MERS) in 2015, countless citizens and patients experienced anxiety and fear [6].

The outbreak of severe acute respiratory syndrome (SARS) in Hong Kong in 2003 also caused mental health problems, such as stress, posttraumatic stress disorder (PTSD), and psychological distress [7]. According to a recent analysis of the psychology and mental state of Korean citizens affected by COVID-19, nearly half of the Korean population (48%), particularly 65% of the population in Daegu, where a mass outbreak had occurred, experienced depressive feelings due to the pandemic [8].

The harmful effects of COVID-19 on mental health are considered more extensive and powerful than those of prior epidemics, and consequently, national mental health is at serious risk. Another concern is that the prolonged pandemic situation may cause not only physical damage to individuals but also a collective form of intense stress [9]. Witnessing or experiencing a disaster causes mental shock, such as anxiety and depression, among individuals and spreads tension and fear like an infection and collectively affects the society. In cases of the Ebola virus, emotions such as fear, panic affected individuals & groups, increasing the occurrence of psychological distress and psychopathic symptoms. Active treatment and intervention for national mental health have become an urgent need to the extent that psychological and mental quarantine, along with COVID-19 prevention, is a significant and increasingly more serious global concern. Furthermore, there is a need for a psychological support system for mental health and against future disasters caused by epidemics [10].

COVID-19 has caused psychological distress amongst health workers and the general public for the following reasons. First, KSA currently has the largest confirmed number of cases in the Arabian Gulf countries, which means that the likelihood of pressure on the health system and fear of infection, which could cause distress, remain high. Second, despite the potential for increased psychological distress in KSA, no study has been conducted to identify the groups that might be suffering the most in terms of distress due to the pandemic. Third, the Arabian Gulf region has specific unique characteristics, such as a natural resource-financed health system, that would necessitate that the public health response to COVID-19 be different from the rest of the world, hence the demand for special academic attention. Finally, as the Arabian Gulf countries have similar backgrounds, culture and religion and are facing similar challenges, this study on KSA could inform policy design to mitigate COVID-19 related distress in the entire region. [11]

Significance of the study

As the COVID-19 pandemic rapidly spread across the world, it is inducing a considerable degree of fear, worry, and concern in the population at large

and among certain groups in particular, such as older. As countries are affected by COVID-19, the elderly population will soon be told to self-isolate for “a very long time” all over the world, although it is well known that social isolation among older adults is a “serious public health concern” because of their high risk for cardiovascular, autoimmune, neurocognitive, and mental health problems. [12]

Aim of Study:

This study aimed to explore effect of the COVID-19 on psychological health state of elderly patients.

Research question:

Does covid-19 affect on the psychology state of elderly patients?

Research design:

Explorative descriptive design, quantitative research to study the effect of COVID-19 on psychological state of elderly patient at Jizan, KSA. This study followed a cross-sectional design to assess the general population’s psychological impact on the COVID19 pandemic at the time of curfew and lockdown in the kingdom of Saudi Arabia. We used an online-based questionnaire distributed through social media apps, like WhatsApp and Twitter, participants were encouraged to distribute the survey. Participants have received the survey request through WhatsApp’s groups of colleagues, family, or friends. In another platform, “Twitter,” they received tweets or messages via different accounts in Saudi Arabia. These messages showed the study purpose, link, and asked for participation. The survey was titled Psychological Impact in Saudi Arabia. After clicking on the link of the survey, a cover page showing the study’s title, purpose, and needed time for completion showed up. If they agreed to participate, they were

asked to click “starts the survey,” and then they start answering the survey questions.

Setting:

This study was conducted at Jazan community at elderly home in Jazan.

Subjects:

This research is applying on 120 respondents selected from Jazan community. At the first, 10 questionnaires will be distributed and the initial results analyzed, after which the remaining 110 questionnaires will be distributed to the rest of the sample to see the final results of the study.

Tools for data collection:

After review of data medical reports, books, internet sites such Google, researches journal. Researcher design questionnaire to collect information from respondents in Jazan community. And it applying on Jazan region. We make questionnaire with multiple-choice, we will use electronic questionnaire link and send the link to our research sample. and then we considered receiving the responses to these responses.

Ethical Considerations: An official permission was granted from the directors of the pre mentioned setting, with reference number (REC43/6/106). Each client was informed about the purpose of the study then an oral consent was obtained before starting the data collection. Confidentiality was ensured throughout the research study process, and the clients were assured that all data was used only for research purpose. Each client was informed that participation is voluntary and free to withdraw from the study at any time.

Statistical design:

Data were verified prior to computerized entry. Descriptive statistics were applied (e.g., mean, standard deviation, frequency and percentages).

Results

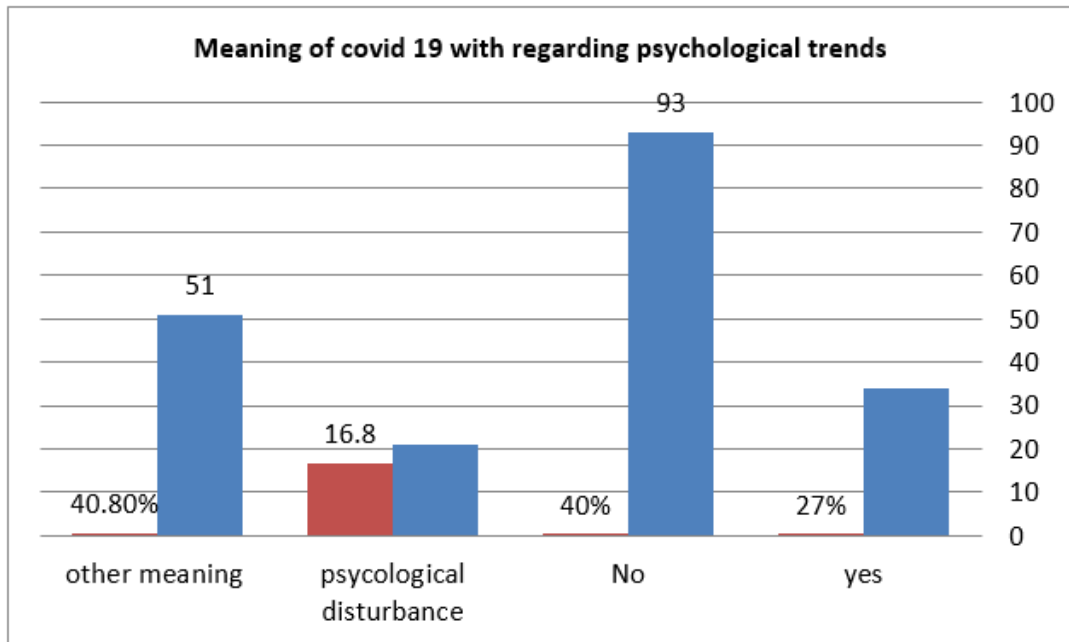


Figure (1): shoes that, psychologically, mean of corona disease; found that 40.80% see other meaning corona virus and 30% is social disease.

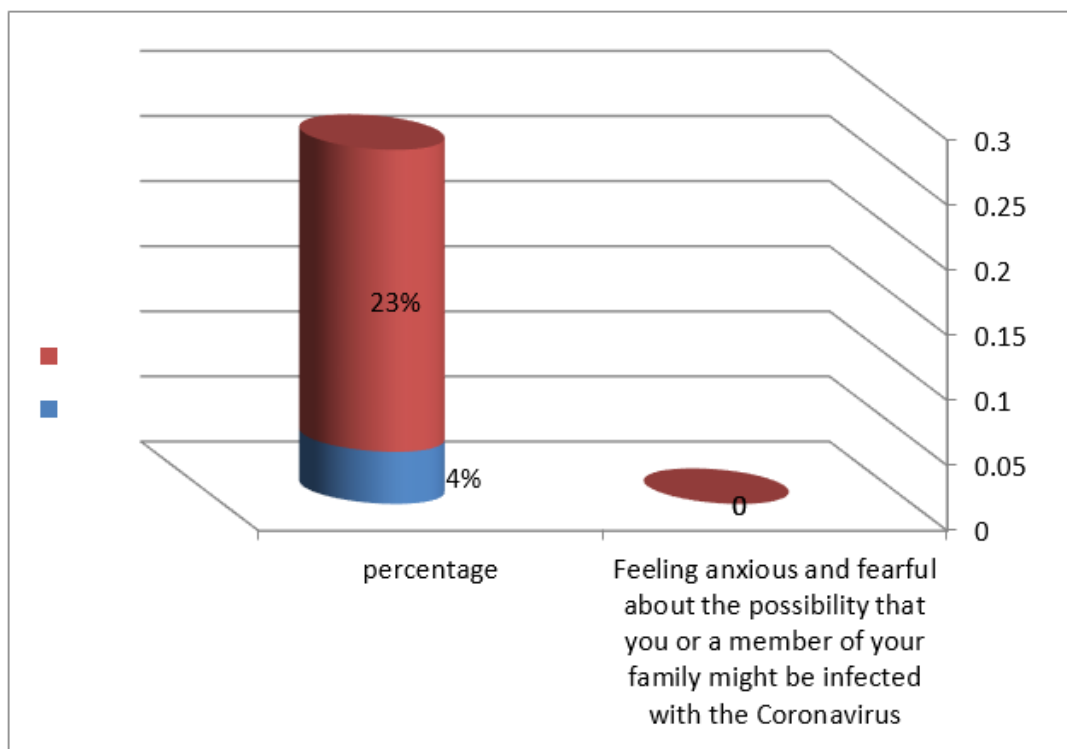


Figure (2): illustrates that individuals need psychological help as a result of the spread of Corona virus, found that most respondents by 74.4% not need psychological help.

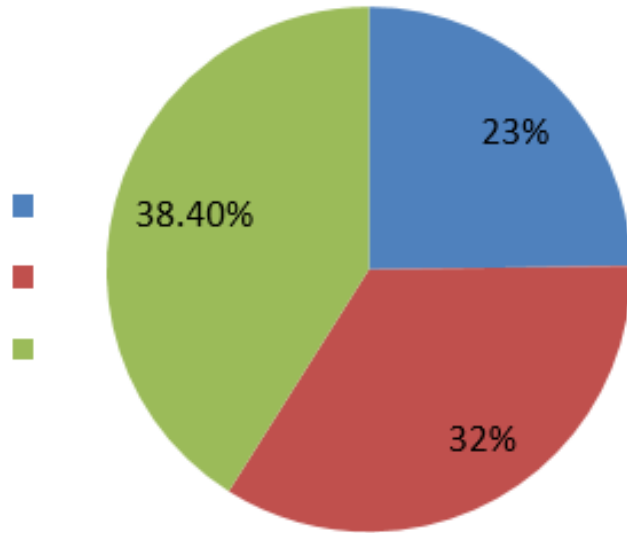


Figure (3): demonstrates that the person felt fear and anxiety about the Corona virus, most respondents 56% felt fear and anxiety and said yes.

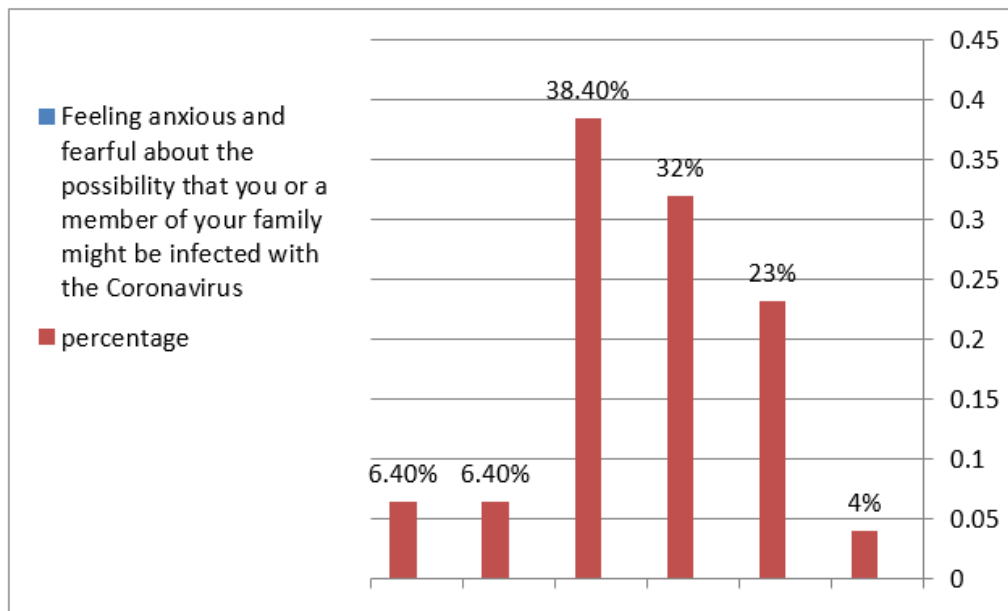


Figure (4): includes that the extent of felt anxious and fearful about the possibility of individual or family member contracting the Coronavirus, 38.4% felt for a little while, 32% don't think too much about it.

Discussion

The COVID-19 has claimed 145,533 lives with 2,158,594 confirmed cases across 213 countries and territories as of the date. China with the largest ageing population had high number of associated deaths in older adults. However, there is currently very little known about the broader impact of COVID-19

on global mental health, in general, and geriatric mental health, in particular. Mental health problems are common in older adults with the prevalent depressive symptoms. The rapid transmission of COVID-19 pandemic outbreak, higher mortality rate, self-isolation, social-distancing and quarantine could exacerbate the risk of mental health problems. Mental

health problems (new or existing) could worsen and further impair cognitive and emotional function. Unlike young segment of population efficiently equipped with the modern contraptions and internet services, most of the older adults have limited access and cognizance of internet and smart phones. A small fraction of older adults familiar with the online services might have decline in the physical activity, or dependence on others. [13]

The spread of the COVID-19 presents serious risks in Saudi Arabia and globally, which has reported 27,011 cases and 184 deaths as of the 4th of May 2020. Saudi Arabia has exceptional circumstances as it is a hub for millions of foreign workers and pilgrims from across the globe. In response to the pandemic and to combat the spread of the disease, the government took swift decisions and closed the two holy mosques, suspended travels to the country and closed most businesses and limited individuals' movement. Further, the government is also creating a national narrative to encourage citizens' adherence to emergency measures to respond to the pandemic. Therefore, this research aimed at assessing the anxiety and depression among people living in Saudi Arabia during the COVID-19 outbreak. [14]

The impact of mental health on older adults varies around the world and the factors impacting geriatric mental health could differ from low-middle income to developed countries. KSA being a collectivistic culture depends highly on extended joint filial and fraternal family system, predominant role of elderly especially grand-relatives including group dining and joint sleep-overs, seeking social-cohesion and family support through multiple events led by older members of the family, family's social and economic dependence on elderly and the decision-making of household through older adults are one of the main tenants in KSA's system [15]

The reliance on social media could act as a tool to prevent loneliness, boredom and tediousness in young group but for older age group the need of social support, liveliness, and daily functioning remain unmet. Online technologies and digital sources are now harnessed to provide virtual-digital social support network and a perceived sense of belonging but the disparities in access to literacy of

these modern technicalities are lost at the most of the elderly group of population.

The mass quarantine and transport restraint have inevitably constricted the activities of older adults: regular walk-and-talk in the park, acquaintance meetings, voluntary service and social care, congregational gatherings, limited contact with plants and animals, and obstacle on accessing prescribed nutrition, medication and treatment. Thus, further aggravating challenges in the wake of COVID-19 for mental health of older adults in the community. Insufficient and inadequate attention has been paid to the mental health of older age group in terms of timely and quality psychological crisis intervention. Social isolation, social distancing, social disconnectedness, and loneliness were found to be mediated with depression and anxiety in a similar study [16].

Action-based psychological preventive public health strategies could cultivate social connection and promote healthy relationships with own-self and others. Cognitive skills and social support networks could help older adults to foster meaningful connection and sense of belongingness during isolation period. Cognitive, behavioral, social, positive and brief therapies delivered online or in-person could enhance mental wellbeing, improve social affiliation and support while simultaneously diminishing perceived loneliness. [17]

Social isolation and social disconnection a documented bidirectional and complex relationship between mental health issues and social disconnectedness - itself poses a serious public health concern among older adults especially due to the psychosocial reasons and physiological health problems such as mental health problems, cardiovascular, autoimmune, neurocognitive, neurobiological, and other at-risk health problems. KSA's government should take concrete instructions for elderly people socially isolated at home or quarantined at healthcare facilities (hospital, clinic, isolation unit, daycare, community center, and place of worship) to have prescribed diet and medications and communicate about the meaning of social in-contact to mitigate their physical and mental health consequences. However, adherence to social isolation

strategies could be weakened with time and such well-timed reinforced implementing preventive measures would efficiently prevent the aggravated morbidity of COVID-19 related to affective mental health problems in older adults.^[14]

This study aimed to assess the psychological impact of COVID-19 pandemic on elderly patient at Jazan community, Saudi Arabia; Our results suggest that concerning the early psychological impact of the general public, 23.6% of respondents reported moderate or severe psychological impact of the outbreak and severe symptoms of stress were experienced by 51%, which is similar to the 45% who experienced severe symptoms of anxiety and 41% who experienced severe symptoms of depression. Our findings are in line with previous findings of a study conducted during the pandemic in Iran where it reported the level of severe anxiety to be 19.1% and another study in Spain where it reported the level depression, stress, anxiety to be 9.9%, 7.8%, 11.6% respectively ^[18] ^[19]. Contrary to the findings of our study, a recently published study in china where 53.8% reported their psychological impact of the outbreak moderate or severe, 16.5% and 28% reported depressive and anxiety symptoms ranged from moderate to severe, while 8.1% reported moderate to severe stress levels. ^[20]

The high prevalence in our study could be attributed to the cases have been reported in Saudi Arabia with the majority of cases are imported from. The findings of this study, in many aspects, were in agreement with those reported during the pandemic in other countries. Therefore, a worldwide collaborative effort is required to develop measures that can address mental health during the COVID-19 pandemic and manage it. And that 32% of society prefer to go to a psychiatrist if they have psychological symptoms due to Corona virus, and that 62% use social networking sites to track psychological symptoms. Respondents with poor self-rated health status found to have a greater psychological impact and poorer mental health compared to the majority of the respondents who view their health status to be (good or very good). Moreover, the most reported physical symptom were headaches, sore throat, muscle pain, symptomatic respondents had poorer psychological status when compared to non-

symptomatic. Similarly, this was seen in the study carried out in Mainland, China, during the COVID-19 pandemic ^[20]. This may be explained by the fact that the novel coronavirus found to be more aggressive on people with comorbidities and below-optimal health status, which may result in more psychological burden and excessive worry ^[21].

Also using a protective mask regardless of the presence of the symptoms was associated with worse IES-R score in contrary to findings by a recent study where they found that mask-wearing was associated with lower levels of anxiety and depression. When comparing our results to a previous study during the outbreak of influenza A (H1N1) in Saudi Arabia, about 61% of the population reported that they did not take mild or minimal precautions to prevent infection ^[29]. There is an increase in using precautionary measures right now, which can be attributed to social media campaigns that are focused on boosting public awareness and emphasizing the importance of wearing masks to prevent spreading of the virus in the community; moreover, the Saudi government adopted new regulations mandating masks wearing in public places ^[22].

The findings of this study emphasize the need for governments to adopt new strategies to improve psychological services for community and individuals level by focusing on delivering accurate, evidence-based information to minimize the effect of fake news and to identify and support high- risk groups especially those with preexisting mental illness by expanding tele psychiatry services, promoting mental wellness and psychological interventions nationwide.

Conclusions

Based on the findings of the current research; the research concluded that research question are supported. Elderly (> 60 year) patients with different comorbidities have a higher risk to contract the virus. Psychological symptoms are likely to arise because of fear, depression and anxiety from the disease, but most of the time these symptoms disappear with the disappearance of the infection. Some are affected by fear, obsession and anxiety from the disease and also because of the quarantine and lifestyle changes.

Recommendations

Based on the research findings, the following was recommended:

1. Accessibility to psychological support and the public health service system should be further strengthened and improved, particularly after reviewing the initial coping and management of the COVID-19 epidemic;
2. Nationwide strategic planning and coordination for psychological first aid during major disasters, potentially delivered through telemedicine, should be established; and
3. A comprehensive crisis prevention and intervention system, including epidemiological monitoring, screening, referral and targeted intervention, should be built to reduce psychological distress and prevent further mental health problems among this population.

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