

INTERNATIONAL JOURNAL OF ETHICS, TRAUMA & VICTIMOLOGY



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INTERNATIONAL JOURNAL OF ETHICS, TRAUMA & VICTIMOLOGY

Journal supported by
Society for Prevention of Injuries and Corporal Punishment (SPIC)
Indo Pacific Academy of Forensic Nursing Science (INPAFNUS)

Aims and scope

This journal is published to expand the academic activities and spread the knowledge, ideas and latest research in the field of ethics, trauma, and victimology. This journal publishes original research papers, review articles, case reports, letters to the editor and review of books on ethics, trauma, and victimology. This journal is supported by the Society for Prevention of Injuries and Corporal Punishment (SPIC) and Indo Pacific Academy of Forensic Nursing Science (INPAFNUS). This journal is supporting the aims of the Society and the Academy. This journal also highlights the achievements of the SPIC, INPAFNUS and their members.

This journal covers the various aspects of ethics, evidence-based medical ethics, ethical dilemmas and various dynamic issues related to ethics. It also covers the ethical issues related to Forensic Nursing Science, Forensic Odontology, and Forensic Psychiatry. It also covers the ethical aspects of Toxicology including Environmental Pollution. It covers issues related to all sorts of corporal punishment and their prevention, particularly in schools. It covers physical as well as psychological aspects of trauma and clinical forensic medicine related to all types of injuries and prevention of injuries. It covers all aspects of victimology including etiology, crime scene investigation, and prosecution.

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Issuance:

Half Yearly

The first volume of the journal published in 2015

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Published by:

Forensicwayout

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Printed at:

Zenith Design World,

22 No. Phatak, Patiala 147001 Punjab India

Phone number: +919872666799

Email: zafar.zenith@gmail.com

ISSN Numbers:

ISSN-L: applied for

P- ISSN: 2394 - 6822

e-ISSN: 2395 – 4272

International Journal of Ethics, trauma & victimology (Online)

Available online at

<http://www.myresearchjournals.com/index.php/IJETV/>

<http://ijetv.forensicwayout.org/>

Indexed with:

Index Copernicus at:

<https://journals.indexcopernicus.com/search/details?id=45254>

Citefactor

at:<http://www.citefactor.org/journal/index/11666#.WkskhtKWbDc>

Ulrichsweb at:

<https://ulrichsweb.serialssolutions.com/search/1467065051>

Scilit at:

<https://www.scilit.net/journals/333950>

The volume of Distribution:

1000 copies

Review Process

It is a peer-reviewed journal. The double-blind review process is followed.

Funding Bodies:

Support by SPIC & donations from philanthropists and advertisements in the journal

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Subscription Information

Rs. 1500 (Abroad US\$ 120 or Equivalent)/issue)

Subscription should be addressed to Dr. Rakesh Kumar Gorea, Editor in Chief International Journal of Ethics, Trauma & Victimology payable at NC Medical College, Israna, Panipat, Haryana, India 132107.

Claims for missing issues

A copy will be sent to subscriber provided the claim is made within 2 months of issue of the journal and self-addressed envelope of the size of 9"x12" duly stamped is sent to the editor in chief (those of who want the journal to be dispatched by registered mail should affix appropriate Stamps)

A peer-reviewed journal Indexed with CiteFactor & Ulrichsweb & Index Copernicus

Volume 4

Number 2

July-Dec, 2018

Pages 1-44

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IJETV

A Half-Yearly Publication
Volume 4(2), 2018

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Editor-in-Chief: Prof. Rakesh K Gorea

From the Editor's Desk

It is my privilege to cross the barrier of 4th year of its publication by presenting before you the 8th issue of the journal when it will become eligible to be recognized by the UGC, India. A little bit delay due to unavoidable circumstances is regretted.

It is very heartening to know that this journal now onwards will also be supported by the Indo pacific Academy of Forensic Nursing Science (INPAFNUS) though it is already being supported by the Society for Prevention of Injuries and Corporal Punishment (SPIC). I am thankful to the INPAFNUS General body for supporting this endeavour. I convey my gratitude to the scientists throughout the world for supporting this journal by sending their research work to this journal. I also convey my thanks to the members of the editorial board and reviewers for the constant suggestions to improve this journal.

Rakesh K Gorea

A summary of ethical aspects of genetic engineering for humans

Citation: Gorea RK. A summary of ethical aspects of genetic engineering for humans. *Int J Eth Trauma Victimology* 2018;4(2):6-9. doi.org/10.18099/ijetv.420

Abstract

The science and art of altering genetic material with the aim of enhancing desirable features and removing undesirable traits is genetic engineering. This can be somatic and germline editing. When scientists are going to meddle with the germline this is natural to raise many eyebrows from the society, which is more or less, still believes that some matters must be left to God. But if we see the potential benefits of this research which seems to be vast and which can remove the sufferings in the society, a voice naturally comes from the conscience that why we should stop this. This research and clinical applications seems to be double edged weapon and naturally in such cases we need to apply our mind in depth so that there are no deleterious effects on the society with the advancement of genetic engineering.

Keywords: Genetic engineering; ethics; gene editing.

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Introduction

Human Genetic engineering is the thoughtful manipulation of the genes for enhancement of the human beings (1). This editing may help prevention of diseases and result in a better health (2).

This may be possible at pre-implantation stage or in an adult. If screening is done at preimplantation stage genetic counseling can be given so that parents can decide not to have a child with genetic disorders (3).

If it is missed at the preimplantation stage or child is born with genetic disorders, then diseases like hemophilia or cystic fibrosis can be corrected by somatic genetic engineering. Not only this, some acquired diseases which may not have any medical cure may be possible to be cured by research on somatic genetic engineering (3). Somatic genetic engineering has the benefit that such changes in the genes will not passed to the next generations though, If performed, it may have positive or negatives psychological effects on the individuals (4). There are less ethical issues with the somatic genetic engineering. Recombinant DNA technology used with retro viruses are comparatively safer and have much potential benefits and its use should not be held back (5).

Germline editing or modifications are changes in the genes that can be inherited by children (6). Editing of germline has been considered dangerous which cannot be accepted ethically (7). Genome editing will be irreversible process which will pass on the next generations and some such changes may become apparent later on which may be dangerous (8).

No doubt genetic engineering in gene line modifications will result in improvements in the life and health of the human beings but such projects may be considered morally discredited, but for the generations to come it may be a good alternative to have a good health (9).

Though germline gene editing has ethical problems the author favors to carry it further as harms are less and the benefits are more. Risks are manageable and reasonable in this procedure both for single gene and multiple gene disorders and are strongly against any ban on this research as it will prevent the future benefits to the humanity based on research on this technique (10).

Newer technique is 'Clustered Regularly Interspaced Short Palindromic Repeat System (CRISPR/Cas9)' and a lot of ethical concerns are raised by the newspapers about genetic engineering (7). This technique has a power which is cheap and safe (11).

There are many issues involved in gene editing e.g. sanctity of human genome, embryo ethics as embryos cannot give the consent, germline gene editing; Reproduction versus research, when germline editing will be inherited in the future generations and risks involved (2).

The community of science may need a guide about their social responsibility in the fields of genetic engineering in the processes like gene editing which can change and spread a trait in the whole population (12).

For Catholics Ejik has concluded after studying two aspects of genetic engineering i.e. DNA recombinant technology or molecular genetic engineering and cellular genetic engineering that to have genetic engineering in gametes is good but genetic engineering in a fertilized is against the catholic norms and does not favor it (13).

Clustered Randomized Interspersed Palindromic Repeat has made it possible to use non-human primates for genetic engineering especially for brain disorders like depression but here is a strong opposition as animal welfare is concerned and there are other methods by which it can be done (14).

Gene editing technology in which DNA is either replaced, removed or added into a gene (1) if used on wild animals will result in animal sufferings and there is no prediction that this suffering of wild animals will definitely reduce suffering in others. therefore to guard the ecosystem wild animal suffering must be justified before such experiments are allowed and the well-being of the animal is taken care of (15).

There are many diseases caused by mosquitoes and there are successes to reduce the population of the particular type of mosquitoes by gene engineering but there are ethical objections that we should not finish one type of species as it violates the rule of the sanctity of life and it shows degrees of hubris which may be unacceptable (16).

Selection of the army person by using the genome testing may result in loss of diversity of army units in the USA. Enhancing warfighters may be good but valid questions are there that what will happen when such persons are released from the army and moreover there is a limited appeal for selection in the army using this technique (17).

Genetic engineering may be used to produce a child which may be used for organ donations and on the face of it will raise many moral issues and ethical dilemmas (18). Gene editing may also be used for gene doping for improvement in performance of athletes and players, which will become very difficult to detect (4).

Transhumanism encourages the use of the emerging technologies for the benefit of the humankind and greatly favors the genetic engineering (19).

Genome editing for reproduction is not a favored idea but gene therapy is comparatively preferred and safe as it has less of ethical issues with almost a consensus that uniform regulations should be throughout the world (20). There is a danger that designer babies may be produced not necessarily for improving the health but to have some specific desired features in the babies (4).

Discussion of ethical issues is very important as ethical issues may be different for different cultures and such discussions will help to frame policies so that everything in this new concept becomes unchallenged ultimately (4). In a meeting of scientists in Washington DC in 2015 it was decided that it is good to have research on somatic as well as germline editing but this procedure should not be used for pregnancies (7).

Gene editing usage may decide the ethical issues whether it is being used for treating the disease or enhancing a feature, though it may not be easy to separate the both (7). Germline editing for research purposes is getting more credibility (11).

First gene editing case in an embryo was published in 2015 and then an urgent need was felt to regulate this technique (11). There have been discussions saying that there should a moratorium on gene editing in humans till policies are discussed, drafted and finalized (7) (11). Transparency in research was violated and there is a question mark on the safety of the procedure used in this case and was as an unnecessary medical intervention (21). Others are of the view that there should not be moratorium but a check and monitoring should be done with adequate safeguards should be there before clinical application of this advancement and genetic enhancement was not be allowed at all (11).

Till we do not know completely the effects of gene editing we will not be able to decide the ethical problems and their solutions (7).

Nicholas is strongly in favor of human enhancement and reproductive freedom and favors liberal eugenics (22). Liao has claimed 4 principles of genetic engineering which apparently looks very good that no child should be produced which do not have all fundamental capacities, and if such is created should it be brought to full term, fundamental capacity should not be removed and lack of some fundamental capacity should be corrected if it can be afforded (21). Different people can have different moral status on any issues (23).

American Society of Human Genetics in 2017 on genome editing held the view that till ethical issues are not sorted out germline gene editing should not be done with the purpose of having a pregnancy though research on it should not be banned and in vitro research should be allowed to be carried on and funds should be provided for the same. Future clinical application should be carried out only if there is no ethical issue, procedure is transparent and a strong medical rational for this (24).

By 2019 FDA in USA has approved five products which can be used for somatic gene therapy (25) which has taken care of the ethical issues for somatic gene therapy but barred that government money cannot be used for germline gene therapy research but allowing the funds for somatic gene therapy (25).

CRISPR, Cryo-electron microscopy (which can visualize at atomic level) and advanced computing models are helping the people working on genetic engineering and making the research easy and fast (26).

There are divergent views on the different aspects of genetic engineering. A relatively newer concept should be carefully debated and adopted so that society is not deprived of the potential benefits of a new concept but taking care of that it does not harm the society at large.

Conclusion

There have been great advances in the genetic engineering since it started but it is not a smooth run as it faces ethical controversies and confrontations. There may be risks if we do it and there may be consequences if we do not do it and we will have to weigh the ethics of proceeding or not proceeding in the research.

In the stages of experimentations, we should try to focus on the specific ethical issues in that particular research rather than raising ethical issues about the main process of genomic editing in the embryos.

We must respect the status of human embryos who themselves cannot give consent but all stakeholders must be consulted when drafting the policies on the ethical issues. We should not forget the human rights which must be taken care of when drafting such policies and using these policies.

Some unknown effects or changes may occur in the genetic line which may not be desirable, and long-term repercussions will only be apparent with the passage of time so we travelling in an unknown territory therefore we need to tread cautiously.

Conflict of Interest

None

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MD, DNB, PhD
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Lip print pattern on different medias: a forensic identification tool

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Citation: Shah UP, Noor F. Lip print pattern on different medias: a forensic identification tool. *Int J Eth Trauma Victimology* 2018; 4(2):10-13. doi.org/10.18099/ijetv.421

Article history

Received: Nov.12, 2018

Received in revised form: Jan 04, 2018

Accepted: Feb 1, 2019

Available online: May 25, 2019

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Abstract

Lip prints are known to be helpful in identification at the crime scene. Its validity comes in question if the data of an individual country or race are not present. The quality may be affected by the media on which the lip prints are available.

With this aim study on different medias were done with a sample size of 75 volunteers on 4 different types of surfaces.

Lip prints are best visualized on the glass surface followed by cup surface and wood surface. Results on the clothes were at the bottom as far as identification was concerned.

Keywords: Lip Prints; identification; different medias.

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Introduction

Role of lip prints in identification is very vast. Study of lip prints is known as Cheiloscopy (1). Lip prints are wrinkles or grooves present in the transition zone of human lip between inner labial mucosa and outer skin. These wrinkles or grooves present on the lips have been named by Tsuchihashi as “sulci labiorum rubrorum” (2).

Identification through lip prints is same as finger print. As finger prints are used for absolute identification, similarly lip prints are used for the same. But nowadays identification through lip prints is gaining attention as criminals are taking precautions like the use of gloves or silicon thumbs, so that their finger prints may not be identified. Like finger prints, lip prints are also unique to the individual. The location of lip print at the scene of crime gives much valuable information about the individual and his habits e.g. lip prints on drinking glass or on a cigarette.

Since 1950, Japanese have carried out extensive research in the matter of cheiloscopy. Tsuchihashi in Japan studied lip print impressions called “KO SHIMON” (mouth fingerprints) in Japanese. Based on research done by Suzuki and Tsuchihashi (3), it was established that the arrangement of lines on red part of human lips is individual and unique for each human being.

The lip prints being uniform throughout life and characteristics of person can be used to verify the presence or absence of a person from the crime (4) provided there has been consumption of beverages, drinks, usage of cloth, tissue or napkin etc. at the crime scene. A careful glimpse of the lips instantly tells us the mood of the individual. Lips are the most expressive, mobile and flexible feature. Besides its role in identification, can be used to verify the presence or absence of persons/suspects from scene of crime by comparing the pattern of lipstick smear with that of the suspect. The lipstick stain present on suspects clothing in a crime scene investigation serves as an indirect evidence and can be used as a link between suspect and the cosmetic using victim. Similarly, smears can also be found on other objects like glasses, cups, wood, cigarette butts and indicate some kind of relation between suspect and crime scene (4). It is also possible to extract “saliva DNA” from lipstick print which might link a suspect to their presence at the crime scene. But the present article reviews which media (like glass, porcelain, cloth or wood) will elicit the clear lip print so that the investigations of crime can be solved.

Aims:

1. To identify the lip print patterns on different media.

Material and Methods

The study has been conducted in the department of Forensic Medicine & Toxicology of Government Medical College, Srinagar amongst the medical students of age group 19-21 years after taking the verbal consent and study completed in around 2 months. The sample size was 100, 0 males and 50 females. After making the allowance for withdrawal due to exclusion criteria the sample size comes out to be 75, 35 males and 40 females.

Inclusion criteria

1. Students of Government Medical College Srinagar of age group 19-24 years.
2. Students who are cooperative and ready to give valid consent to participate in the study.
3. Students having lips free of disease and deformity.

Exclusion criteria

1. Students having history of allergy to lipstick.
2. Students with any kind of pathology like infection/inflammation of lips, injury or deformity, scar or type V lip print pattern.

Materials used in the study

1. Lipstick (dark colour).
2. Porcelain cups (white colour).
3. Glasses (transparent).
4. White cotton cloth.
5. Wooden pieces.
6. Cotton balls.
7. Magnifying lens.

Procedure

The demonstration regarding the recording of lip prints was explained to the students. The students were asked to properly clean their lips with water and dry them. Apply lipstick over the lips evenly starting from the center and moving up to the vermillion border. The upper and the lower lip are rubbed together properly prior to taking the lip prints in order to ensure that lipstick was spread evenly over the lips. The lipstick was allowed to dry for two minutes. Then the students were asked to be stationary and apply their lip print of lower lip one by one over the articles (lipstick refreshed each time for each article) viz. porcelain cup, glass, white cotton cloth and piece of wood. After the procedure was completed, for all the students, lip

prints were studied by using magnifying lens, identified and results were recorded in excel.

The lip prints were studied by the naked eye examination and classified according to Tsuchihashi and Suzuki system of classification (5).

Type I: Clear cut groove running vertically across the lip.

Type I': Partial length groove of Type I.

Type II: Branched pattern.

Type III: Intersecting pattern.

Type IV: Reticular pattern.

Type V: Other patterns.

Type V lip print pattern was excluded from the study since it did not fall in any of the categories, also it cannot be differentiated morphologically.

Results

Table no. 1: Articles eliciting lip print patterns.

Articles	Clearl y visibl e	Faintl y visibl e	Not visualis ed	Tot al
1. Glass	71	04	0	75
2. Cup	59	11	05	75
3. Wood	33	28	14	75
4. Cloth	14	28	33	75

Lip print pattern clearly visualized from glass followed by cup then wood and lastly on cloth.

Discussion

The most commonly used scientific method for forensic identification are fingerprints and dental record comparisons (6). Lip prints have the ability to distinguish individuals and hence can be used as a potential tool in human identification purposes (7).

Cheiloscopy deals with examination of furrows on the red part of human lip and is an important tool in forensic sciences just similar to fingerprints and DNA analysis (7) (8).

Based on the lip prints, the mucosal area of the individual lips is pivotal as far as identification is considered and this is called as Klein's zone. This zone is covered with grooves and wrinkles which form a characteristic pattern called as lip print, which are unchangeable and permanent like finger print and palatal rugae (9). Obtaining lip prints is highly sensitive technique as it depends on various factors like amount of pressure applied, direction and method used in making the print as well as the amount of lipstick used for developing lip print (10).

Collection of lip print with suitable transferring and recording media is important.

Lip prints left at the crime scene help in identification of suspect when proper comparison is done (11).

The present study shows that the lip print pattern is clearly visualized on glass surface followed by porcelain cup, then wood and lastly on cloth.

The study was compared with study conducted with study conducted by Singh et al, which showed that cup showed significantly higher good lip prints developed as to both satin and cotton while satin was found to have significantly higher good lip prints developed as compared to cotton. Results of this study were same as that of the above study (12).

A study by Castella A et al showed that lysochromes are very effective when used on long lasting lipstick prints on porous surfaces, such as paper or fabric where detection is usually difficult (13).

The study conducted by Dolly et al, satin fabric and cup yielded better results as compared to cotton fabric probably due to greater absorbance of lipstick content by the cotton. The smoother and uniform surface of white clay cup and satin fabric are better for the development of lip prints than cotton fabric. Results are consistent with the present study.

The results of the present study are in accordance with the above studies as the clearly visible lip prints are seen on the glass and cup surfaces and least on the wood and cloth surfaces. The benefit of the present article is that we have used four different medias as compared to the above studies which used two or three medias only.

The major shortcomings of lip print analysis are regarding the permanence of various lip print patterns. Even though they are believed to remain unchanged throughout one's life. Various studies have reported that major trauma to the lips can result in scar formation; also any surgical treatment carried out to correct any abnormality can affect size and shape of lips and alter morphology and pattern of lip prints. The lip prints produced may vary in appearance as the lip grooves are present on the exposed part. Hence, this requires further study to establish the uniqueness of lip grooves, to develop standard protocols for collecting and analyzing lip prints (14).

Cheiloscopy is applicable mostly in identifying the living, since lip prints are usually left at crime scene and can provide direct link to the suspect (14).

Recommendations

A database of lip prints should be created for all criminals especially the ones with persistent criminal record so that these identification tools can be put to their best use as evidence to trace the offender.

1. Lip prints record of public should be created and consolidated in correlation with record of identity for social masses to have a data bank for specific identification of each individual resident which can be of utmost help in speculation of crime and mass disasters for e.g. The unique identification no. In form of Aadhar card has these details but are not shared with investigation agencies.
2. Training and workshops of medical and police personnel should be conducted to highlight upon importance of collection of samples lip prints in dead bodies and from scene of crime, so that, trace evidences located at scene of crime can be cross matched to victim and accused for legal purpose.
3. Lip-prints in conjunction can be used for establishing the identity in unknown cadavers and also prove helpful in gender discrimination in mutilated bodies. For this purpose, more and more studies should be conducted I various parts of the country to develop a profile of trend of occurrence in various regions and different communities.

Conflict of Interest

None.

Ethical clearance

Not required

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Trend of poisoning at a tertiary care centre of Haryana: An autopsy based study

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Citation: Dalal SS, Giri SK, Jakhar JK, Dhatarwal SK, Yadav P, Yadav N. Trend of poisoning at a tertiary care centre of Haryana: An autopsy based study. *Int J Eth Trauma Victimology* 2018; 4(2):14-18. doi.org/10.18099/ijetv.422

Article history

Received: Jan.31, 2018
Received in revised form: March 01, 2019
Accepted: March 7, 2019
Available online: May 25, 2019

Abstract

Among the various modes of deaths, deaths due to poison are more common due to low cost and easy availability of poisonous substance especially in developing countries like India. The aim of present study is to analyse the trend of poisoning based on demographic and social parameters. The present study was conducted in the Department of Forensic Medicine, Pt. B. D. Sharma, PGIMS Rohtak in the period of one year i.e. 01/01/2018 to the 31/12/2018 over 282 cases. Data were compiled, tabulated and analysed statistically. In this study, males outnumbered the females with male: female ratio 1.51:1. Most common age group affected was 21-30 years (34.7%) followed by age group 31-40 years (21.9%). Maximum number of cases of poisoning were seen in unemployed persons (20.2%) followed by labourers (19.1%). Most of the cases of poisoning belongs to rural residential area (66.3%) whereas (33.7 %) belongs to urban residential area. In both genders the cases of poisoning more common in married individuals (64.2) as compare to the unmarried individuals (35.8%). Ingestion of poison was most common mode of intake (84.4%) followed by inhalational mode (15.6%). Most of the individuals died within 6 hours of ingestion of poisonous substance (33.7%) followed by survival period between 6 to 12 hours (30.5%). Maximum number of cases were suicidal in manner (58.5%) whereas (41.5%) were accidental in manner collectively as well as in both genders. Homicidal poisoning was not observed. Deaths due to poisoning in young adults and in married persons are more common proven by many studies including present study which is a major concern. In order to avoid poisoning, many steps can be taken specially to limit the availability of poison.

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Keywords: Poisoning; autopsy study; survival period.

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Introduction

Poisoning refers to the damaging physiological effects of ingestion, inhalation or other exposure to a range of pharmaceuticals, illicit drugs and chemicals including pesticides, heavy metals, gases and common household substance (1). Death due to poisoning has been known since time immemorial. Poisoning is a major problem all over the world, although its type and the associated morbidity and mortality vary from country to country. According to the legal system of our country, all poisoning death cases are recorded as

unnatural death and a medico-legal autopsy is routine (2). Poisoning is the fourth common cause of mortality in India (3). Various studies pertaining to poisoning statistics demonstrated considerable difference between North India and South India (4). It has been found that the incidence of Aluminium Phosphide poisoning is increasing in North India (5) (6) (7). Number of studies have been done on subject of profiling or trends of poisoning in different regions of our country. The aim of present study is to analyse the trend of poisoning based on demographic and social parameters.

Material and methods

The present study was conducted in the Department of Forensic Medicine, Pt. B. D. Sharma, PGIMS Rohtak in the period of one year i.e. 01/01/2018 to the 31/12/2018. Total 1354 hospital death cases were brought for post-mortem examination in the mortuary of Department of Forensic Medicine in the period of one year i.e. 01/01/2018 to the 31/12/2018. Out of total 1354 cases, 282 cases in which history of poisoning was present and in which autopsy findings suggestive of poisoning were present were included in this study. Various details of each case like age, sex, residential area, occupation, marital status, survival time after consumption and mode of poisoning were noted in systematic manner on a proforma.

Results

Noted parameters of each case like age, sex, residential area, occupation, marital status, survival time after consumption and mode of poisoning were compiled, tabulated and analysed statistically. Results obtained is shown below in tables.

Table 1: Gender wise distribution of cases

Gender	No. of Cases
Male	170
Female	112
Total	282

It is evident from the above table that males outnumbered females contributing 60.28 % to the total number of cases. The ratio of males to females is 1.51:1.

Table 2: Age wise distribution of cases

Age group (in years)	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
<10 years	1	0.59 %	1	0.89 %	2	0.7 %
10 – 20	13	7.64 %	20	17.8 %	33	11.7 %
21 – 30	64	37.6 %	34	30.3 %	98	34.7 %
31 – 40	38	22.3 %	24	21.4 %	62	21.9 %
41 – 50	27	15.9 %	16	14.3 %	43	15.3 %
51 – 60	18	10.6 %	12	10.7 %	30	10.7 %
61 – 70	8	4.7 %	4	3.5 %	12	4.2 %

71 – 80	1	0.59 %	1	0.89 %	2	0.7 %
Total	170	100 %	112	100 %	282	100 %

Table 2 showing that maximum cases of poisoning was seen in the age group 21 to 30 years i.e. 98 cases (34.7 %) followed by age group 31-40 years i.e. 62 cases (21.9%). For both genders maximum no. of cases seen in age group 21 – 30 years.

Table 3: Occupational status wise distribution of cases

Occupational status	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Farmer	30	17.6 %	20	17.8 %	50	17.7 %
Student	17	10.0 %	19	16.9 %	36	12.8 %
Job	30	17.6 %	0	0 %	30	10.6 %
Businessmen	10	5.8 %	0	0 %	10	3.5 %
Labourer	33	19.4 %	21	18.8 %	54	19.1 %
Housewife	0	0 %	45	40.1 %	45	15.9 %
Unemployed	50	29.4 %	7	6.2 %	57	20.2 %
Total	170	100 %	112	100 %	282	100 %

As per table 3 most of the cases of poisoning were seen in unemployed i.e. 57 cases (20.2%) followed by labourer i.e. 54 cases (19.1%). Among females, maximum cases of poisoning seen in housewives i.e. 45 cases (40.1%)

Table 4: Residential area wise distribution of the cases

Residential area	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Rural	107	62.9 %	80	71.4 %	187	66.3 %
Urban	63	37.1 %	32	28.6 %	95	33.7 %
Total	170	100 %	112	100 %	282	100 %

It is evident from the above table 4 that most of the cases of poisoning belongs to rural residential area i.e. 187 cases (66.3%) whereas 95 cases (33.7 %) belongs to urban residential area. In both genders

rural area individuals are more as compared to urban area.

Table 5: Distribution of cases on the basis of marital status

Marital Status	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Married	108	63.5 %	73	65.2 %	181	64.2 %
Unmarried	62	36.5 %	39	34.8 %	101	35.8 %
Total	170	100 %	112	100 %	282	100 %

Table 5 showing that in both genders the cases of poisoning more common in married individuals as compare to the unmarried individuals. The married cases shared 64.2 % whereas unmarried cases shared 35.5 %.

Table 6: Distribution of cases on mode of intake wise

Mode	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Ingestion	134	78.8 %	104	92.9 %	238	84.4 %
Inhalation	36	21.2 %	8	7.1 %	44	15.6 %
Total	170	100 %	112	100 %	282	100 %

Table 6 showing that ingestion of poison was most common mode of intake, seen in 238 cases (84.4%) followed by inhalational mode 44 cases (15.6%).

Table 7: Distribution of cases on basis of survival period after consumption

Survival period after consumption	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Brought dead	18	10.5 %	20	17.8 %	38	13.5 %
<6 hours	45	26.5 %	50	44.6 %	95	33.7 %
6 to 12 hours	66	38.9 %	20	17.8 %	86	30.5 %
12 to 24 hours	21	12.4 %	11	9.8 %	32	11.3 %
24 to 72 hours	17	10.0 %	9	8 %	26	9.2 %
3 to 7 days	3	1.7 %	2	1.8 %	5	1.8
Total	170	100 %	112	100 %	282	100 %

As per table 7 most of the individuals died within 6 hours of ingestion of poisonous substance i.e. 95 cases (33.7%) followed by survival period between 6 to 12 hours in 86 cases (30.5%).

Table 8: Manner wise distribution of the cases

Manner	Male		Female		Total	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Suicidal	95	55.9 %	70	62.5 %	165	58.5 %
Accidental	75	44.1 %	42	37.5 %	117	41.5 %
Total	170	100 %	112	100 %	282	100 %

As per table 8 maximum number of cases were suicidal in manner 165 cases (58.5%) whereas 117 cases (41.5%) were accidental in manner collectively as well as in both genders. Homicidal poisoning was not observed.

Discussion

In the present study males (170, 60.28%) outnumbered the females (112, 39.72%) with male to female ratio 1.51:1 which is similar to the studies conducted by the various authors like Pawar et al (8), Patil et al (9), Vaidya et al (10), Dash et al (11), Satinder et al (12) and Maharani et al (13). However, study done by Kristinsson et al (14) and Hovda et al (15) is contrary to the present study in which male to female ratio is lower.

The most common age group of poisoning in this study is 21-30 years (34.7%) followed by age group 31-40 years (21.9%). The number of cases in extremes of age groups i.e. less than 10 years and 71-80 years are least (0.7% each) in this study. The findings related to age group of the other studies done by Pawar et al (8), Patil et al (9), Maharani et al (13) and Dash et al (11) is similar i.e. most common age group is 21-30 years.

In this study most of the cases of poisoning are seen in unemployed individuals i.e. in 57 cases (20.2%) followed by labourer i.e. 54 cases (19.1%). Among males, maximum number of cases is seen in unemployed persons whereas in female's maximum cases of poisoning seen in housewives i.e. 45 cases (40.1%). In the study by Maharani et al (13) among males labourers are more common in 18.66 % cases which is near about the value of present study i.e. 19.1% and in females' housewives are more common which is similar to present study. In present study maximum number of the cases of poisoning belongs to rural residential area i.e. 187 cases (66.3%) whereas 95 cases (33.7 %) belongs to urban residential area. In both genders rural area individuals are more as compared to urban area. The findings of present study are similar to the study done by Dash et al (11). In the study done by Satinder et al and Patil et al (9) incidence is higher in urban areas.

In both genders the cases of poisoning more common in married individuals as compare to the unmarried individuals. The married cases shared 64.2 % whereas unmarried cases shared 35.5% which is similar to the study of Prajapati et al (16).

In this study oral route of poisoning is most common, seen in 238 cases (84.4%) followed by inhalational mode 44 cases (15.6%) which is in accordance with the study done by Adinew et al (17) and Patil et al (9).

It is evident from the present study that most of the patients died in early hours of the treatment. Maximum patients died in the within 6 hours of the

treatment i.e. 95 cases (33.7%) followed by survival period between 6 to 12 hours in 86 cases (30.5%). 13.5% sufferer not reach hospital live i.e. brought dead.

In present study maximum number of cases were suicidal in manner 165 cases (58.5%) whereas 117 cases (41.5%) were accidental in manner collectively as well as in both genders which is in accordance with the other studies done by Khosya et al (18), Singh et al (19) and Patil et al (9). No case is found to be homicidal in manner.

Conclusion

Deaths due to poisoning in young adults and in married persons are more common proven by many studies including present study which is a major concern. In order to avoid poisoning, many steps can be taken specially to limit the availability of poison. Early hospitalization may play the pivotal role to reduce the number of deaths due to poisoning which is evident from the present study that most of the patient died in early hours of hospitalization which reflect the late admission of victims. The incidence of poisoning and its morbidity and mortality can be reduced by developing and implementation of effective prevention strategies.

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The correlation between knowledge and attitude among medical students of Yarsi University class of 2015 towards corneal transplantation

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Citation: Yasmine S, Basbeth F. The correlation between knowledge and attitude among medical students of Yarsi University class of 2015 towards corneal transplantation. *Int J Eth Trauma Victimology* 2018; 4(2):19-23. doi.org/10.18099/ijetv.423

<p>Article history</p> <p>Received: Dec 13, 2018 Received in revised form: May 11, 2018 Accepted: May 18, 2019 Available online: May 25, 2019</p>	<p>Abstract</p> <p>Background: The dissent of corneal transplantation is influenced by several factors, including how individuals understand knowledge about corneal transplantation in general as well as knowledge in Islam.</p> <p>Objective: This study aims to determine whether there is a correlation between the level of knowledge and attitudes amongst Medical students of YARSI University class of 2015 against corneal transplantation reviewed from medicine and Islam.</p> <p>Research Methods: This study used analytical methods. The survey technique used was a questionnaire and cross-sectional, by collecting data without any follow up. The population and sample of this study were medical students of YARSI University class of 2015 with inclusion criteria, the sample determined randomly, the formula from Slovin is used with a critical value of 5% and give the results of 150 samples. Data analysis used Chi-Square test.</p> <p>Results: From the results of the study, there were 36.7% students who had good knowledge, 38% with sufficient knowledge, and 25.3% with less knowledge about corneal transplants. From the results of the statistical test using the Chi-Square test, the value of p value is 0.615.</p> <p>Conclusion: There is no significant correlation between the level of knowledge and attitudes towards corneal transplantation amongst medical students of YARSI University class of 2015. There is dissent about the allowance towards corneal transplantation.</p> <p>Suggestion: In the future studies, it is expected to have more understanding about corneal transplantation and addressing the practice of corneal transplantation so the coverage can be broader and reconsider the place of research carefully.</p>
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<p>Keywords: Corneal transplantation; knowledge; attitudes; correlation; Islamic views.</p> <p style="text-align: right;">© IJETV. All rights reserved</p>	

Introduction

Transplantation is an act of removing organs, tissues or cells from donors to recipient. Organ transplantation is broadly classified according to the similarity between the location of the transplant and also between donors and recipients. Allotransplant involves transplanting from one individual to another which from the same species. Xenotransplant is a transplant carried out from donors and recipients from different species. Because of the large amount of transplant requests and often far exceeding the availability of donor organs, transplant programs are often burdened with complex legal and ethical issues (1).

Corneal transplant or commonly known as keratoplasty is a surgical procedure used to remove the recipient's cornea and replace it with a donated cornea, usually the corneal donation comes from a deceased person (dead donor). Keratoplasty is one of the most widely performed transplants in humans. The success of the first keratoplasty occurred in 1905 by Edward Zirm, who succeeded in transplanting cornea into a patient who suffered blindness due to burns. Since then keratoplasty is the treatment of choice for corneal blindness and can successfully treat 80-90% of corneal disease in developing countries (2).

Based on the research among 500 young Singaporeans aged between 18-25 years, around 73.2% answered less or equal to 3 questions from the 7 questions raised related to corneal transplantation correctly. 31% were willing to donate their corneas, 22.2% were unwilling and 46.8% were hesitant. In particular, students with good basic knowledge of corneal transplantation were 1.71% more likely to be willing to donate their corneas. Then based on research conducted on 107 medical students and 75 environmental science students from developing countries in Africa, showed a lack of knowledge and awareness on corneal transplants. And also based on studies conducted on medical students and young doctors in Tabuk, Saudi Arabia shows that most of them have low levels of awareness, knowledge, and attitude regarding eye donations and corneal transplants. Therefore, most of them need to know more about eye donations and corneal transplants (3).

Research conducted on Nigerian University faculty of medicine, with a questionnaire method. Give results, from 131 students from 183 students who qualified to participate in this study. 104 students were aware of a corneal transplant. But 95 students were not aware that the eyes could only be removed from deceased donors, 84 students were not aware that cataract eyes could be donated, 87 students were not willing to provide assistance for their donations. It can be concluded that medical students lack knowledge about some aspects of corneal transplantation. This may be a predictor of the level of awareness of the general public. The development of innovative education and extension education strategies is needed at this stage of national development to overcome misunderstandings surrounding corneal transplantation. There is a need to target medical students as motivators, counselors and future eye donors. This will help advance the level of currency donations in Nigeria whenever the eye bank's establishment plan is finalized (4).

Based on several studies mentioned above, it can be concluded that there is very little knowledge about corneal transplantation among medical students in various countries. This is also one of the reasons for the lack of availability of someone to donate their corneas

Basically as in the word of Allah SWT (QS: Al Israa [17]: 70) (5).

﴿ وَلَقَدْ كَرَّمْنَا بَنِي آدَمَ وَخَمَلْنَاهُمْ فِي الْبَرِّ وَالْبَحْرِ وَرَزَقْنَاهُمْ مِنَ الظَّلَاطِيبِ وَفَضَّلْنَاهُمْ عَلَى كَثِيرٍ مِمَّنْ خَلَقْنَا تَفْضِيلًا ﴾

Meaning: And verily we have glorified the sons of Adam, we have carried them on the land and in the sea, we have given them sustenance from the good and we have exalted them with perfect advantages over the many creatures that we have created.

The verse above explains that humanity's caution towards corpses, because it is stated that humans are the most noble beings.

Muslim scholars and researchers conduct research on the issue of transplantation in Islam, to reach a legitimate position according to sharia. This is done through the application of good Islamic goals that guarantee and safeguard the interests of individuals, as well as society. In fact, organ transplants are ijihad, no existent on clear hadith about transplants makes an issue of dissent among Muslim scientists and researchers. Which is classified into two opinions, opinions that accept and reject transplants.

Based on this, the researchers were interested in conducting research on the correlation between the level of knowledge and attitudes towards corneal transplantation amongst medical students of YARSI University class of 2015.

Material and Methods

The type of this research is an analytical research with a cross sectional study design. The population of this study was the students from the Faculty of Medicine, YARSI University class of 2015 with a population of active students are 239 people. The samples taken were 150 class A and class B students from the Faculty of Medicine, YARSI University who has the inclusion criteria (class of 2015 class who were active in the Faculty of Medicine, YARSI University, were willing to be respondents, who were/had followed the sixth semester) and exclusion criteria (students in the class of 2015 who are not active, who are not willing to be respondents, have not followed the sixth semester). The technique used for sampling is purposive sampling. Data collection is done using a questionnaire. Univariate and bivariate data analysis using the SPSS 21.0 version.

Results

In this study, there were 150 medical students class of 2015 who have the inclusion criteria. Based on table 1. shows that between 150 students who were sampled and fulfilled the inclusion criteria mostly were female with percentage 71.3%, and aged between 18-23 years

Table 1. Characteristic Distribution of Respondents

No.	Category	Frequency	Percentage
1	Gender	Male = 43 Female = 107	Male = 28,7% Female = 71,3%
2	Age	18 yo = 2 19 yo = 6 20 yo = 57 21 yo = 69 22 yo = 14 23 yo = 2	18 yo = 1,3% 19 yo = 4% 20 yo = 38% 21 yo = 46% 22 yo = 9,3% 23 yo = 1,3%

Table 2. Categories of Knowledge Distribution of Respondents

No.	Knowledge	Frequency	Percentage
1	Good	55	33.6
2	Sufficient	57	38.0
3	Bad	38	25.3
Total		150	100

Table 2. showed that the knowledge amongst medical students of YARSI University class of 2015 towards corneal transplantation have the highest frequency at the category of sufficient which about 57 (38.0%) people.

Table 3: Attitude Categories Frequency Distribution of Respondents

No	Attitude	Frequency	Percentage
1	Agree	75	50,0
2	Neutral	72	48,0
3	Disagree	3	2,0
Total		150	100

In Table 3: showed that respondents attitudes towards corneal transplantation were between agreement, neutral, and disagreement, where the attitude of agreeing had the highest frequency and percentage compared to the other two categories of attitudes with frequency of 75 people followed by a neutral attitude with frequency of 72 people and a frequency of at least 3 people owned by an attitude of disagree.

In Table 4. showed that knowledge of corneal transplants did not have a significant correlation with attitudes toward corneal transplantation. The Chi-square test showed the result did not suitable to chi square criteria where the value of $P > 0.05$, so there was no statistically correlation between the level of knowledge and attitudes towards

Table 4. Distribution of Bivariate Analysis with Chi-Square Method Correlation between Knowledge Level and Attitude

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4,458 ^a	6	,615
Likelihood Ratio	4,228	6	,646
N of Valid Cases	150		

corneal transplantation. Even though, in percentage, there is a relation between the level of knowledge and attitudes amongst medical students of YARSI University class of 2015 towards corneal transplants wherein most students who agree are from students who have a good level of knowledge.

Discussion

From the collected data and processing data that can answer the question of the researcher to find out whether there is a correlation between the level of knowledge and attitudes amongst medical students of YARSI University class of 2015 towards corneal transplants. This study uses a cross-sectional method, done once, without follow-up so there is no causal correlation. The studied factors are including the level of knowledge and attitudes towards corneal transplants. The study was conducted with data collection techniques using Questionnaire. The statistical result showed, there is no significant correlation between the level of knowledge and attitudes towards corneal transplantation, the results were p value = 0.615. Based on 3 (three) categories of attitudes, there are agree, neutral, and disagree give results attitude of agreeing has the highest percentage which meets the three categories of knowledge levels, which are good, sufficient, and bad. Where the agreeing category most came from students with a good level of knowledge.

However this is not in accordance with several studies about the correlation between the level of knowledge and attitudes towards corneal transplants that have been carried out, where most of the studies found a significant relation between the level of knowledge and attitudes towards corneal transplantation, one example the research conducted by Bi Eze and friends, conducted by a comparative cross-sectional survey method, based on questionnaires on fourth-year environmental science students at the University of Nigeria done in October 2012. Demographics,

knowledge, and attitudes of participants towards eye donations and corneal transplants analyzed using descriptive and comparative statistics.

Between participants (107 medical students, 75 environmental science students) totaling 117 men and 65 women aged 22.3 ± 2.2 years (range 18-32 years). There were no significant differences between groups regarding the awareness of corneal donations and the willingness to donate their own corneas or the corneas of their relatives. Significantly more medical students than environmental science students have good knowledge of corneal transplants. With conclusions, among medical and non-medical undergraduate students, there are important shortcomings in knowledge and attitudes towards eye donations and corneal transplants. An awareness campaign for enhanced donations and the introduction of undergraduate programs on eye donations can reverse the trend (4) . (Eze, 2014).

Various factors can influence the results of this study. Knowledge about transplants that are still lacking among students can influence the results where there is no meaningful correlation between knowledge and attitudes towards corneal transplants, as well as a lack of knowledge from Islam's view of the transplant itself. In addition, the number of respondents who only 150 people can also be a factor, there is a possibility that if the more respondents will give results that accordance to the hypothesis I, besides respondents who are still in the 6th semester when doing this research can also be a factor, where there is still a lack of knowledge due to the absence of information about corneal transplants included in the curriculum or competency standards of Indonesian medical students. Differences in opinion about the permissibility and non-permissibility of corneal transplants in Islamic teachings can also influence the attitude of students who choose to be neutral.

Conclusion

Based on the results of this study, correlation between the level of knowledge and attitudes towards corneal transplantation amongst medical students of YARSI University class of 2015, viewed from medicine and Islam, conclusions can be drawn as follows:

1. Chi-Square statistical test shows there is no significant correlation between the level of knowledge and attitudes toward corneal transplantation amongst medical students of YARSI University class of 2015.

2. Medical students of YARSI University class of 2015, the sufficient category of knowledge has the highest percentage (38%) and the highest attitude was in the 58% which is agreement.
3. In this study shows students who have good knowledge do not necessarily have a good attitude towards corneal transplants.
4. Based on the results of the research that the authors did, shows that there is dissent in Islam regarding corneal transplants such as opinions that allow or prohibit, this is what can cause differences of opinion regarding corneal transplantation.

Suggestion

1. For medical students in general to further enhance general knowledge and knowledge of Islam about transplantation in general and corneal transplantation specifically.
2. For researcher to be able to conduct research with the same problems but with broader respondents and different variables.

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Analytical study on oil and gas field occupational injuries for high incidence of fatality, bodily injuries and measures of prevention

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Citation: Shekhar S. Analytical study on oil and gas field occupational injuries for high incidence of fatality, bodily injuries and measures of prevention. *Int J Eth Trauma Victimology* 2018; 4(2):23-26. doi.org/10.18099/ijetv.424

Article history

Received: Sept 22, 2019

Received in revised form: April 14, 2019

Accepted: April 21, 2019

Available online: May 25, 2019

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Abstract

Oil and Gas, though is available in Earth is largely localized in Venezuela, Russia, US and Middle East and this sector employs a very large number of workers. Fatal and Non-Fatal Accidents though very common, only next to Construction and Transportation Industry, is seldom reported especially in Middle East Countries, where the workers are mostly expats, and where Civil and human Right issues of Expats is grossly neglected. Hence documents and publications about accidents and fatalities are grossly scant, incomplete and inadequate. Hence present analytical research study is based on piece meal reports from scanty publications, internet sources, newspaper, Insurance company claim reports, Bureau of Labor and Employment reports remain the sources for gathering Oil and Gas Field Occupational Fatal and Non-Fatal Injuries.

Keywords: Oil and gas well; drilling accident; oil platform falls; crush injuries, spinal cord injuries, toxic exposure; burn injuries.

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Introduction

“Occupational injuries constitute a major portion of the global injury burden, comprising almost 30% of all medically treated injuries to adults aged 18 to 64 years. The International Labor Organization (ILO) estimated that every year, about 2.2 million people die from work related injuries and work related diseases. Furthermore, there are around 270 million non-fatal workplace injuries occurring, where the victims miss at least three days off work. It is also estimated that 4% of the Gross Domestic Product (GDP) is lost due to workplace accidents and illnesses in the US. The majority of the global workforces are located in the developing countries where the rate of injuries is even 10 to 20% higher compared to developed countries” (1).

“The oil and gas industry is one of the leading industries where a great portion of workforces are employed. The risks of injuries are higher in such industry compared to other sectors. According to the US national safety council, non-fatal work related injuries are 49% higher for the oil and gas field services industry than for all US industries combined, and these injuries are more severe” (1).

Petroleum in Earth remains the main source of Energy

Petroleum has remained the main source of Energy production all over the world. Petroleum is present in Earth as Oil, Liquid Gas, Oil Shale and Oil Sand. 88 Million barrel of Petroleum and Crude Oil is consumed to produce energy per day all over the world. Proven reserve of Petroleum in the earth is 1,726,685 Billion barrel. (US Geological Survey,2013). 52.2 Million barrel of *Crude Oil* is excavated per day world over and 890.4 Billion Standard Cubic Meter of *Natural Liquid Gas* extracted and exported per day world over (2).

The Activities in Oil and Gas Industry during which accidents may take place

In Oil Industry

The Upstream activities are: 1. Oil Extraction, 2. Drilling Oil Wells. This includes Oil Exploration, Oil Well drilling. The Midstream activities are: 1. Support Activities for Oil Operation. This includes Onshore and Offshore activities e.g. Separator activity, Emulsion breaking, Desilting. The Downstream activities are: 1. Refineries, 2. Associated Industries (3).

In Gas Industry

The Upstream activities are: 1. Extraction of Natural Liquid Gas and Sulfur, 2. Recovery of Hydrocarbon Liquids. This includes Gas Exploration, drilling. The Midstream activities are: 1. Support Activities for gas Operation. This includes Transport of Gas through Pipe line from Onshore to Offshore. The Downstream activities are: 1. Packaging, 2. Shipment of gases (3).

The Occupational Hazards, Fatality and Non-Fatal Body injuries in Oil and Gas Industry

It is estimated that out of 100 Laborer, 1 labor in 1 year suffers from Fatal and Non-Fatal Injury in Oil and Gas Fields world over (4). It can be due to Fall, slip and trip from height in 51% cases; Object falling and hitting in 33.4% cases; Electrocution in 11% cases; Explosion - Blast-Burn in 6% cases; Injury during transportation in 5.9% cases and Crush-Squeeze-Trapping in 3% cases. The cause of bodily injury is Fire and Explosion in 14.3%; Confined Space fatality in 8.8% cases, rigging activity 6% cases, Gas Pipe Line Commuting in 4% cases, Rigger repair in 3% cases and Welding 2% cases. The body part being injured is Whole Upper Extremity in 38.8% cases, out of which Injury affecting Hand and Finger only in 32.17% cases. Eye injury in 19% cases, Lower Extremity injury in 18.2% cases, Head and Neck injury in 11.2% cases, Abdominal Injury in 11% cases, Chest- Trunk- Back injury in 2.4% cases and Spinal injury in 2.4% cases (4).

The present Analytical research study reviews all available sources to find out Fatality and Injury in Oil and Gas Industry based on 1. Mechanism as cause of injury, 2. Body part injured and 3. Industrial activity leading to injury.

1. Mechanism based fatality and injury in oil and gas industry

- **Man fall and slip was mechanism of injury** in 51% in UAE (2003-05), but only 11.8% in Oman (2007-09)
- **Object fall on man was mechanism of injury** in 33.4% in Saudi Arabia (1995), 15% in Dubai (2003-5), 5% in Oman (2007-9) 74.9% in Doha Qatar (2007-8) and 4000 Cases in Texas, USA (2003-17)
- **Object hit was mechanism of injury in 8 cases in Oman (2007-9)**
- **Electrocution or powered machine** was mechanism of injury in 11% in Dubai UAE (2003-5),

- **Transport related Road Traffic Accident** was mechanism of injury in 5.9% in Oman (2007-9), and 8.2% Fatal in USA
- **Animal related Road Traffic Accident** was mechanism of injury in 7% in Dubai UAE (2003-5)
- **Explosion, blast and Burn** was mechanism of injury in 6% in Dubai UAE (2003-5) and 8.2% in Oman (2007-9).
- **Crush, Squeeze, Trap, Pinch and Penetrate** was mechanism of injury in 11 Cases in Oman (2007-9) 3% in Doha Qatar (2007-8)

Table1: Mechanism based fatality and injury in oil and gas industry

S. N	Mechanism of Injury	KSA Am ong Insured 1995	UAE 2003-05	Oman 2007-09	Doha Qatar 2007-08	Bahra 2007	IRAQ
1.	Human Fall-Slip-Trip		51%	11.8%	74.9%	7 per 100,000	
2.	Object Fall on man	33.4% (22,015)	15%	2.9%			
3.	Object hitting man			4.7%			
4.	Electrocution		11%				
5.	Transport & Commuting			5.9%			
6.	Animal related		7%				
7.	Explosion		6%	8.2%			1.5%
8.	Crush-Squeeze			6.4%	40.3%		3.0%
	Total	100%	100%	100%	100%		
		(65,915)		(12,48)			

2. Body part-based fatality and injury in oil and gas industry

- **Extremities of the body sustained injury** in 55% cases in Dubai, UAE (2003-5), with Lower Extremity involvement in 18.2% cases and Upper Extremity involvement in 38.8% cases in Dubai UAE (2003-5)
- **Hand and Finger of the body sustained injury** in 32.1% in Saudi Arabia (1995)
- **Ankle of the body sustained sprain injury** in 14 Cases in Oman (2007-9)
- **Chest, Trunk and Back of the body sustained injury** in 13% cases in Dubai UAE (2003-5), and in 2.4% Cases in Oman (2007-9)
- **Head and Chest of the body sustained injury** in 12% cases in Dubai UAE (2003-5), and in 11.2% Cases in Oman (2007-9) and in 4% in Iraq.
- **Abdomen of the body sustained injury** in 11% cases in Dubai UAE (2003-5)
- **Face of the body sustained injury** in 9% cases in Dubai UAE (2003-5) (5).

Spinal injury in 2.4% cases in Iraq. (Table 2)

Table 2: Body part-based fatality and injury in oil and gas industry

S.N	Body Part Injured	KSA 1995	UAE 2003-5	Oman 2007-9	Bahrain 2007
1.	Upper Extremity		55%	38.8%	
2.	Hand & Finger only	32.7% (21,158)		38.8%	
3.	Lower Extremity			18.2%	
4.	Ankle			8.3%	
5.	Chest Trunk & Back		13%	2.4%	
6.	Head & Neck		12%	11.2%	4%
7.	Abdomen		11%		
8.	Face		9%		
9.	Eye			19%	
10.	Spinal Cord				2.4%
	Total	100% 65,912	100%	100% (168)	

3. Industrial Activity based Fatality and Injury in Oil and Gas Industry

- **Rigging Sector** suffered 6 incidences of Fatal Injury in USA (2014)
- **Commuting-Transport sector** suffered 4 incidences of Fatal Injury in USA (2014)
- **Crane-Lift- Winch Truck sector** suffered 4 incidences of Fatal Injury in USA (2014)
- **Welding sector** suffered 4 incidences of Fatal Injury in USA (2014)
- **Repair Rigger sector** suffered 2 incidences of Fatal Injury in USA (2014)
- **Fire & Explosion in Gas Pipe Line sector** suffered 14.3% incidences of Fatal Injury in USA (2014); In Saudi Arabia in Saudi ARAMCO on 18-11-2007 in Gas Pipeline Explosion 28 workers Died (2007)
- **In Confined Space sector** due to - Exposure to harmful Environment 8.8% suffered incidences of Fatal Injury in USA (2014) (Table 3) (5).

Table 3: Industrial activity based fatality and injury in oil and gas industry

S. No	Industrial Activity	KSA(ARAMCO) 2007	USA 2014
1.	Rigging		06
2.	Commuting-Transport	Gas Pipeline Explosion-28 Deaths	04
3.	Crane-Lift-Winchtruck		04
4.	Welding		02
5.	Rigging Repair		03
6.	Fire-Explosion		14.3 % Fatal 85.7% Non-Fatal Burn
7.	Toxic Gas in Confined Space		8.8%

4. Injuries and Illness Fact Sheet in Drilling oil well and gas well - USA Bureau of Labor Statistics (2007)

Table 4: The top 15 countries having proven oil reserve in world (In Billion barrel)

Sr.No.	Country	Oil reserve	Comments
1.	Venezuela	298.40	(undiscovered areas not d)
2.	Saudi Arabia	268.3	
3.	Canada	171.0 (2014)	
4.	Iran	157.8	Burgan oil field of Kuwait 2 nd largest in world)
5.	Iraq	144.2	
6.	Kuwait	104.0	
7.	Russia	103.2	(40% of countries GDP)
8.	UAE	97.8	
9.	Libya	48.36	
10.	Nigeria-	37.2	(98% of Govt. revenue in 2012)
11.	USA-	36.52	(14% of Nigerian economy)
12.	Kazakhstan-	30.0	
13.	China-	24.65	
14.	Qatar-	25.24	
15.	Brazil	15.31	
Total World	Estimated in	1,726,685 Billion Barrel	

Struck by object 32.5%, caught in object, equipment and material 21.2%, overexertion 11.3%, fall on same level 9.3%, fall to Lower Level 5.3%, struck against object 3.3%, exposed to harmful substance 3.3%, transportation accidents 2.0%, slips, trips 1.3%, all others 10.6%.

5. Proven oil and gas reserve in world (in billion barrel) (2)

Proven reserve for Oil and Gas in world is estimated to be around 1,726,685 Billion Barrel (US Geological Survey, 2013), The top 15 Countries are: Venezuela, Saudi Arabia, Canada, Iran, Iraq, Kuwait, Russia, UAE, Libya, Nigeria, USA, Kazakhstan, China, Qatar, Brazil. (Table 4)

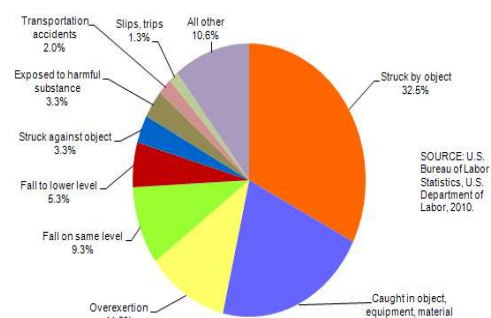


Fig. 1. Distribution of injuries and illnesses with days away from work in drilling oil and gas wells by event 2007 (3).

6. Oil Excavation in World. (in Million barrel per day)

In Excavation of Oil the ten top countries are: Russia, Saudi Arabia, USA, Iraq, Iran, China, UAE, Kuwait, Brazil and Venezuela. (Table 5)

Table 5: Excavation of oil– world production as reported by OPEC in 2017.

Oil Excavation. (Million barrel per day)			
	COUNTRY	CRUDE PRODUCTION	OIL PERCENT OF WORLD
1.	Russia	10.3	13.9%
2.	Saudi Arabia	10.0	13.3%
3.	USA	9.4	12.5%
4.	Iraq	4.5	6.0%
5.	Iran	3.9	5.2%
6.	China	3.8	5.1%
7.	UAE	3.0	4.0%
8.	Kuwait	2.7	3.6%
9.	Brazil	2.6	3.5%
10.	Venezuela	2.0	2.7%

7. Natural Gas Extraction and Export in World (in Billion Standard Cubic Meter) (2)

In excavation and Export of Natural Liquid Gases the topmost 10 countries are: Russia, Qatar, Norway, USA, Canada, Australia, Algeria, Netherland, Turkmenistan and Malaysia. (Table 6)

Table 6: Excavation of natural gases – world production as reported by OPEC in 2017; natural gas export (billion standard cubic meter)

COUNTRY	NATURAL GAS EXPORT	PERCENT OFWORLD
Russia	212.5	18.0%

Qatar	128.6	10.9%
Norway	122.5	10.4%
USA	89.7	7.6%
Canada	84.7	7.2%
Australia	74.7	6.3%
Algeria	53.9	4.6%
Netherland	48.0	4.1%
Turkmenistan	39.0	3.3%
Malaysia	36.8	3.1%

Preventing oilfield injuries

There could be five recommendations for Oil and Gas industry to prevent and decrease Oil field Fatal and Non-Fatal Accidents and Injuries.

1. All tools, materials, and other debris always be put away and secured, after they have been used. This will prevent the risk to co-workers, causing them to trip, slip, or fall.
2. To wear protective gear and clothing e.g. safety goggles or an eye mask, a helmet or hard hat, sturdy boots, long pants and sleeves, and protective gloves, of proper size when on the job.
3. Monthly and quarterly safety training or programs be arranged for workers to sensitize for need to follow all safety procedures and policies at workplace.
4. At the earliest opportunity accidents any unsafe conditions be reported to suitable authority and co-workers. This will help them addressed timely to prevent further future injuries.
5. No untrained person be allowed to

handle machinery, equipment, and tools

Conflict of interest

None

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Dental age assessment in children and adolescents

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Citation: Sharma N. Dental age assessment in children and adolescents. *Int J Eth Trauma Victimology* 2018; 4(2):28-31. doi.org/10.18099/ijetv.425

Article history

Received: Dec 24, 2018

Received in revised form: March 19, 2018

Accepted: April 13, 2019

Available online: May 25, 2019

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Abstract

Dental age estimation is an important part of Forensic Odontology. Dental age is considered to be important as dental development and mineralization show less variability than other developmental features and has low variability in relation to chronological age. Dental development is more reliable as an indicator of biological maturity in children and less effected by nutritional and hormonal changes. UN convention on the Rights of the Child (1989) and section 55 of the Borders Citizenship and Immigration Act 2009 defined "Child" as a person under the age of 18 (eighteen) years. Indian Juvenile Justice (Care and Protection of Children) Act, 2000 designates an individual who has not attained the age of 18 years as juvenile. Dental age estimation in children is required for various reasons viz. children of refugees who doesn't possess proper birth certificates, asylum seeker, victims and suspects of crime, identification of mutilated bodies, criminal liability, child labor etc. This paper reviews the various methods to determine the dental age in children.

Keywords: Age estimation; dental development; forensic odontology.

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Introduction

In 19th century, the idea of using teeth for age estimation originated in England during industrial revolution. Edwin Saunders (1837) was the first dentist who presented the dental implication in age assessment entitled "Teeth A Test of Age" to the English parliament (1). Dental age estimation in children and adolescent is based on the time of emergence of the tooth in the oral cavity and the tooth calcification. Many studies have concluded that the tooth formation is a more reliable indicator of dental maturity than gingival emergence or eruption.

Need for age estimation (2) (3) (4) (5): The application of dental age estimation is manifold-

1. For the purpose of identification of mutilated body of the victim.
2. For age estimation of refugee children not having proper birth documentation.
3. For anthropological study.
4. For treatment planning of various dental and skeletal abnormalities.
5. Medico-legal issues.

Some legal applications in India are (4) (5) (6).

1. Minimum age for criminal responsibility –In India a child below the age of 12 is not held for criminal liability as per IPC Sec.83

2. Minimum age for employability- Work by children below 14 years of age constitutes child labour.

3. Status of majority: It is attained at the age of 18 years.

4. Legal permissible age for marriage for boys is 21 years and for girls is 18 years.

Methods of dental age estimation in children and adolescents. -

1. **Visual Method:** It is based on the sequence of eruption of the teeth. Tooth eruption is considered first as the incisal/occlusal tip of tooth piercing the gingiva to be clinically visible in the mouth. Eruption of teeth is affected by climate, race, diet and geographical factors. Townsend and Hamell (1990) showed that the dental eruption sequence in children, i.e. number of teeth present in mouth is independent of environmental factors and can result in precise and accurate dental age estimation than height measurement. From primary teeth, dental age can be estimated from 6 months to 33 months. There is no evidence of tooth eruption

from age 2.5 to 6 years. From permanent teeth, age can be estimated from 6 years to 14 years and third molar shows the most variation in the eruption from 16 years to 23 years (7) (8) (9). This method is less reliable than radiographic method.

2. **Radiographic Method:** There are three methods used—

- (I) **Atlas method:** In this the dental development is compared with established standardized dental development charts corresponding to chronological age.
- (II) **Scoring Method:** In this the dental development is divided into various stages and given individual scores to determine dental age by statistically derived formulae.
- (III) **Measurement method:** The measurement of length of crown and roots of third molar especially; and width of open apices are used in dental age estimation.

(I) **Atlas method-** includes-

- A) **Schour and Masseler method:** Schour and Masseler (1941) studied the development of deciduous and permanent teeth, describing 21 diagrams from 5 months in utero to 35 years of age and published the numerical development charts for them. These charts do not have separate surveys for males and females. **Kahl and Schwarze** (1988) updated Schour and Masseler's atlas using 993 radiographs of children and produced charts for separate sex for each age (10).
- B) **Ubelaker's Atlas** (1978): Ubelaker's atlas of dental formation and eruption among American Indians was compiled from a variety of sources, because some studies suggest that teeth probably form and erupt earlier among Indians.
- C) **London Atlas** (2010): Al Qahtani et al (2010) developed a comprehensive evidence based atlas to estimate age using both tooth development and alveolar eruption for human individuals between 28 weeks in-utero and 23 years. This study is based on the examination of the

developing teeth from 72 prenatal and 104 postnatal skeletal remains of known age at death at Royal college of Surgeons of England and Natural History Museum, London, UK. This atlas covers as much of the developing dentition as possible and all ages are represented. Developmental stages are illustrated as radiographic representation and clarified by the addition of written description (11).

(II) **Scoring methods** includes-

- A) **Nolla's Method:** C.M. Nolla (1960) evaluated the mineralization of permanent dentition in 10 stages. Each tooth is assigned a reading and a total of the maxillary and mandibular teeth are made. The total is compared with the pre-determined values in the table to determine the age. It is reliable method as girls and boys are dealt separately (12).
- B) **Moorees method:** Moorees et al (1963) studied the developmental stages in the 14 stages of mineralization for developing single and multi-rooted. Permanent teeth and the mean age for the corresponding stage were determined (13).
- C) **Demirjian method:** Demirjian et al (1973) introduced a method which estimated dental age based on the development stages of seven teeth (excluding third molar) from left side of the mandible of French Canadian children. They used the stages, usually been marked by recognizable tooth shapes, from the beginning of calcification to final mature form. The formation stages of the teeth are assessed, the individual score for each of seven stages are summed and this is converted to a single dental age by comparing to tables of dental maturity scores for boys and girls separately. This system is applicable from ages 3 to 17. **Chaillet and Demirjian (2004)** modified this method and included third molar. The previous Demirjian's 8 developmental stages were numbered 2-9 and stage 0 and stage 1 were added and called crypt stage, it represents the stage when crypt is

visible without dental germ in it. Now there are 10 stages for each tooth (0-9). Each stage is given a gender specific biologically weighted score. The sum of scores for all teeth is calculated and is converted in dental age using appropriate tables of percentiles, which were derived by using fifth degree polynomial interpolation. Acharya (2011) has developed India-specific regression formula based on Demirjian's 8 teeth method which gave better age estimates (14) (15) (16).

- D) **Haavikko method:** Haavikko (1974) studied 1162 Finnish children's radiograph between the ages of 2 and 21 years. Twelve radiographic stages of 4 permanent teeth are used to assess the dental age. This method is useful when some of the permanent teeth may be missing congenitally. In this method, the formation of the teeth is assessed- six relating to crown formation and six relating to root formation. Then average is taken to determine dental age (17).
- E) **Willem's method** (2001): This was based on a study on Belgian Caucasian population and formed new tables for the dental maturity for boys and girls. The dental age is obtained by adding the maturity score of different teeth. This method is simpler and retains the advantage of Demirjian's method and there was reduction in overestimation of age (18).

(III) Measurement Method:

- a) **Open apices method** (19,20): Cameriere et al (2006) derived a formula for dental age estimation in children based on relationship between age and measurement of open apices in teeth. The seven left mandibular teeth are used to calculate dental age. The number of teeth with complete root formation and closed apical end are noted as N_0 . In the teeth with open apex, the distance between the inner side of open apex is measured [A]. For the teeth with the two roots, the sum of

the distances between inner sides of two open apices is taken. To nullify the magnification, the measurement of open apex/apices is divided by the tooth length[L] for each tooth and these normalized measurements of seven teeth are used for age estimation. The dental maturity is calculated as the sum of normalized open apices[s] and the number of teeth with root development complete [N_0]. The values are substituted in the following regression formula for age estimation.

$$\text{Age} = 8.971 + 0.375g + 1.631x5 + 0.674 N_0 - 1.034s - 0.176 s N_0$$

Many authors have found Cameriere's method with modification to be the most accurate method of age estimation. However, a regression model for different population is required for accurate estimation. Balwant Rai et al (2010) evaluated Cameriere's method and yielded specific formula by linear regression for Indian population.

$$\text{Age} = 9.402 - 0.879C + 0.663 N_0 - 0.711s - 0.106 s N_0$$

Where C is a dummy variable equal to 0 for the centre or north of India and 1 for the south.

- b) **Harris and Nortje method** (1984): The age assessment is difficult after 17 years of age. They have given five stages of third molar root development with corresponding mean ages and mean length (21).
- c) **Van Heerden system:** The development of the mesial root of the third molar was assessed to determine the age using panoramic radiograph (22).

Determination of juvenile/adult status: Bhowmik et al (2013): assessed Belgian formulae in determining minor/major status in Indians by third molar development and suggested that this formula is valid in age estimation in Indian context, but it should be used carefully and judiciously. Acharya et al (2014) reported reliable success in determining the juvenile/adult status in Indian population by using Kohler's

grading for third molar and logistic regression formulae (23) (24).

Conclusion

The notion behind any method of age estimation is to compare the physical development and maturity with the age. There are biological variations and uncertainty associated with age estimation. Therefore, combination of various methods provides reliable age estimation. There is no single method which can precisely estimate an individual's age. Considering the acceptance of level of error rates, more reliable method is to be found to be within maximum acceptable limit and validity.

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Reporting domestic violence in emergency- medicolegal issues

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Citation: Verma V. Reporting Domestic violence in Emergency- Medicolegal issues. *Int J Eth Trauma Victimology* 2018; 4(2):32-38. doi.org/10.18099/ijetv.426

Article history

Received: Dec 24, 2018

Received in revised form: March 19, 2018

Accepted: April 13, 2019

Available online: May 25, 2019

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Abstract

As emergency physicians now recognize that social behaviors such as tobacco, alcohol, and substance abuse have enormous medical implications, we have also come to appreciate that domestic violence is an epidemic that has to be addressed by us. The Indian Department of Women & Child development estimates that women & children on average experience 35 episodes of domestic violence before seeking help. Many of these victims will present to emergency departments as a consequence of this abuse. This literature review & case report is intended to inform emergency healthcare providers, who are caring for these victims of domestic violence. Emergency physicians who are more aware of the distinguishing features of the battering syndrome and provide appropriate crisis intervention may help victims to seek early legal and social aid, thereby preventing development of a chronic situation or a personal tragedy.

Keywords: Domestic violence, abuse, post-traumatic stress disorder, legal liability.

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Introduction

Each year more than 1.5 million victims worldwide seek medical care for injuries resulting from domestic violence (1). Domestic violence is a not a new problem, prior to 1824, a householder was socially allowed in past to batter his/her partner/child, provided the stick he/she used was smaller in diameter than human thumb, thus giving rise to the expression "Rule of thumb." There is no accepted definition of domestic violence in the medical literature and there is wide variation in the terms used to describe the phenomenon; abuse, intimate partner abuse, interpersonal violence, wife battering, or violence against women are all in common use. Terms such as "wife beating" and "violence against women" are unsatisfactory as they imply that abuse is only man against woman. While most domestic violence is directed at women by their male partners, a significant proportion of domestic violence occurs against men in heterosexual, and against men and women in homosexual relationships. There is also great disparity in what constitutes "violence". Significant proportions of the public and medical community restrict the term violence to physical assault. While this definition of violence is usually valid for violence perpetrated by a stranger, usually resulting from conflict, it has less validity for assaults perpetrated

by an intimate partner. Violence within a relationship usually results from coercion and comprises controlling behavior, verbal abuse, and economic control, in addition to physical assault. This is acknowledged by the World Health Organization who define violence as "the intentional use of physical force or power, threatened or actual...that either results in, or has a high likelihood of resulting in injury, death, psychological harm, mal-development, or deprivation" (2). The Survey defines "domestic" as "all intimate relationships, whether or not there has been co-habitation" and 'violence' as 'wounding and common assault.' This does not include non-physical manifestations of domestic violence because this survey is concerned with those acts that fit the legal definition of a crime (2).

Definition of Domestic Violence as per Protection of Women from Domestic Violence Act (DV act) 2005 (3).—For the purposes of this Act, any act, omission or commission or conduct of the accused shall constitute domestic violence in case it—

(a) harms or injures or endangers the health, safety, life, limb or well-being, whether mental or physical, of the aggrieved person or tends to do so and includes causing physical abuse, sexual abuse,

verbal and emotional abuse and economic abuse; or

(b) harasses, harms, injures or endangers the aggrieved person with a view to coerce her or any other person related to her to meet any unlawful demand for any dowry or other property or valuable security; or

(c) has the effect of threatening the aggrieved person or any person related to her by any conduct mentioned in clause (a) or clause (b); or
(d) otherwise injures or causes harm, whether physical or mental, to the aggrieved person (3).

Definition of physical & sexual abuse as per DV act, 2005 (3):

(i) "Physical abuse" means any act or conduct which is of such a nature as to cause bodily pain, harm, or danger to life, limb, or health or impair the health or development of the aggrieved person and includes assault, criminal intimidation and criminal force;

(ii) "Sexual abuse" includes any conduct of a sexual nature that abuses, humiliates, degrades or otherwise violates the dignity of woman (3).

"Exclusion of liability" of informant doctor reporting "bodily injuries" during domestic violence in DV act

Any person who has reason to believe that an act of domestic violence has been, or is being, or is likely to be committed, may give information about it to the concerned Protection Officer or Police officer of the jurisdiction of incidence. No liability, civil or criminal, shall be incurred by any person for giving in good faith of information. No suit, prosecution or other legal proceeding shall lie against any service provider or any member of the service provider who is, or who is deemed to be, acting or purporting to act under this Act, for anything which is in good faith done or intended to be done in the exercise of powers or discharge of functions under this Act towards the prevention of the commission of domestic violence (3).

No doctor is a domestic violence expert, neither a forensic medicine specialist nor a gynecologist/pediatrician. However, as is the case when their patients have other medical problems, emergency physicians need to be aware of in-house and community resources available to victims of domestic violence.

Case report: A 45 years old Chinese women tourist with known case of mental depression on antidepressants, was brought in emergency in

conscious oriented asymptomatic state with wet lower clothes smelling foul suggestive of urination in clothes, by his interpreter cum tourist guide from her hotel with history of uncontrollable frequent bed wetting since past 3 days and abnormal behavior of excessive laughing/ crying without any reason since one day. Patient had come from her native place in china 3 days ago on tourist visa to travel north India along with her friends. No family member accompanied patient to India. Patient reported no complain of fever/vomiting/ trauma/ seizure/ loss of consciousness/ pain anywhere. Bedside triaging female nurse routinely examined her vital parameters including blood pressure, pulse and respiration. While applying BP cuff, nurse noted extensive reddish blue bruise over both arms posteriorly. Patient denied any history of injury. On further examination, patient had multiple bruises of reddish blue & green color all over the body for different duration. (Figure 1 & 2). Patient had bilateral raccoon eyes suggestive of subcutaneous ectopic bruise of reddish blue color, probably due to blunt head injury. On extensive interrogation via her interpreter, patient gave history of physical assault by her partner 4-5 days ago, thus she left her and came to India with her friends.



Fig. 1. Extensive bruise over left upper limb of patient



Fig. 2. Extensive bruise over right upper limb of the patient.

BP= 130/80mmHg, Pulse rate= 86/min, SPO2= 98%, Random blood sugar= 98. On local examination, Chest Bilateral Breath sounds, Abdomen was distended below umbilicus with

palpable mass in lower abdomen. On further enquiry via interpreter, patient told that she had amenorrhea since 5 months. Gynecological examination by Gynecologist & ultrasound examination of pelvis revealed that she was pregnant with 5-month intrauterine live fetus. But patient denied any history of recent sexual encounter, and showed unawareness regarding her pregnancy. Orthopedician examined the patient's limbs and had no localized tenderness or deformity, thus ruled out underlying fracture/dislocation. Psychiatrist enquired further and patient revealed history of domestic violence by her partner, and after perusal of all the expert medical opinion & routine investigations (which were all within normal limits), patient was diagnosed as a suffering from post-traumatic stress disorder related to antepartum domestic violence, so she ran away from her home, and came to India to prevent further domestic violence. Urinary incontinence was the result of mid-term pregnancy, gravid uterus causing pressure on urinary bladder. Patient was advised regular antenatal checkup, pregnancy safe antianxiety medications & counselling was done, to relieve her stress, and was discharged in stable condition in guardianship of local social support group in association with local police & her country's immigration authority for future safety from domestic violence from her abusive partner, and was discharged from emergency in stable condition.

Case Discussion

Since domestic violence crosses international borders, racial, socioeconomic, and cultural lines, and since it is so common, all women should be screened periodically for violence during emergency visits. While victims do not generally spontaneously disclose abuse, there is ample evidence that they will respond when asked and that they are grateful for the opportunity. Simply asking a victim about domestic violence and then offering the patient a nonjudgmental, compassionate response can, in itself, be a powerful form of intervention. The physician must resist the impulse to urge the patient to leave his/her abusive partner at once. Abused patients are more likely to be seriously injured or killed at the time they attempt to leave their partner than at any other time. Furthermore, leaving an abusive relationship is a process, not an event. We expect lifestyle changes, such as smoking cessation, to take time and to require multiple messages and strategies, and this is the case with addressing violence, as well.

Instead, assure the patient that he/she does not deserve to be abused and help is available. Recommend that she take measures to ensure the safety of herself and her children. Getting the patient to leave a violent relationship is not the goal; helping the patient to be safer, on the other hand, is of paramount importance.

Many studies have demonstrated that the incidence of domestic violence increases during pregnancy and the postpartum period. This fact, along with frequent doctor visits during pregnancy and a woman's concern for the safety and well-being of her child, make pregnancy a particularly important time for domestic violence assessment (4).

Improving detection of domestic violence

While the evidence does not support screening for domestic violence, it is still important that emergency physicians know how to create the opportunity of a patient disclosing domestic violence, so that self-reported victims of domestic violence can be offered help. This process is distinct from a screening program. Ideally all consultations should take place in a private room with, initially, only the patient and the doctor. This simple step is not widely applied; often the partner is encouraged to be part of the consultation process. If exclusion of the partner became standard, then the partner who insisted on staying with his or her partner would look more suspicious. This may be particularly difficult in cases where the patient does not speak English, is confused or where a witnessed history is vital, for example, syncope. It is inappropriate to rely on family members to interpret; official interpreters should be used where possible. The Confidential Enquiry in Maternal Deaths recommends that every woman is interviewed alone at least once during the antenatal period and this sensible step could be extended to emergency medicine (5). Simple, direct, non-judgmental questions are the best way to inquire about domestic violence if this is felt appropriate (6).

Screening form for domestic violence (as per MOHFW guidelines, 2014) (1)

Please tick mark ☒ in the column applicable
Domestic Violence: Yes/No

If Domestic Violence, then:

Initial resuscitation/First Aid given: Yes/No
Information about available service: Yes/No
Medico-legal certificate: Yes/No
Safety Assessment: Yes/No

Informed Protection Officer: Yes / No
Counselling done: Yes/No

Physical violence

Hitting, Slapping, Punching, Pinching, Pushing, Throwing objects

Painful bending & twisting of limbs

Physical restrain by tying limbs with cord, handcuffs, locked in a room

Keeping Hungry - Not providing food & water for nutrition

Electric shocks & burns

Causing skin burns with flame of fire / cigarette butts / heated utensils / acid throwing

choking / strangulation / Hanging

Denying the victim needed medical care, depriving them of sleep or other necessary functions.

forcing the victim to engage in drug or alcohol use against their will

Attempted suicides by victim, often admitted in the hospitals as accidental consumption of poison

Sexual violence

Forced sexual intercourse

by Husband, father, uncle, relative, neighbor

Unnatural Sexual intercourse (Buccal / anal coitus)

Penetration by penis/ finger/object in vagina/ anus/ mouth

Forced to watch pornography or other obscene material

Forcibly using you to entertain others

Any other act of sexual nature, abusing humiliating, degrading or otherwise violating dignity.

Verbal and emotional abuse

Accusation /aspersion on your character or conduct, etc.

Insult for not bringing dowry, etc.

Insult for not having a male child

Insult for not having any child

Demaneing, humiliating or undermining remarks/ statement

Ridicule / Abusive Name calling

Forcing you to not attend school, college or educational institution

Preventing you from taking up a job or business

Preventing you from leaving the House or premises

Preventing you from meeting any particular person

Forcing you to get married against your will

Preventing you from marrying a person of your

choice

Forcing you to marry a person of his/their own choice

Signs & symptoms in suspected child sexual abuse

Pain on urination and /or defecation

Abdominal pain/ generalized body ache

Inability to sleep

Sudden withdrawal from peers/ adults

Feelings of anxiety, nervousness, helplessness

Inability to sleep

Weight loss

Feelings of ending one's life (1)

In one hospital in the USA the rate of detection of domestic violence among female patients increased from 1% to 18% after patient charts were modified to include screening questions for domestic violence (7). Screening occurred less often at night, with sicker patients, and with patients presenting with a primary psychiatric diagnosis.

Management of an identified victim of domestic violence in Emergency

As always the priority is to treat the physical injury. Injuries should be meticulously recorded and photographs taken if appropriate. Specific inquiry should be made about the presence and age of children living in a violent household. Attempts should be made to find out whether any children are at risk of abuse, both by direct questioning and use of the child protection register. Any concerns for child safety should lead to the activation of local child protection procedures (8). Interestingly women were more likely to disclose domestic violence to female nurses despite the male nurses asking the same proportion of patients (9).

“Medicolegal Liability” of Hospital receiving victim of domestic violence (as per DV act 2005) (3).

If an aggrieved person or, on her behalf a Protection Officer or a service provider requests the person in charge of a medical facility to provide any medical aid to her, such person in charge of the medical facility shall provide medical aid to the aggrieved person in the medical facility.

Incidence and prevalence: Most common age groups were between 20 and 30 years in both males and females who were victims of such domestic violence (10). It is realistic to assume that the incidence and prevalence rates derived from interview based surveys are underestimates as studies relating to domestic violence are

invariably hampered by the reluctance of victims to disclose information. In one cross sectional study by PP Gupta et al (2018), 11.7% of victims visiting a variety of emergency departments were there because of acute injury or stress related to domestic violence. The most striking finding in this paper was the lifetime prevalence rate for domestic violence of 54.2% in victims attending emergency departments. Husband's alcoholic habit was the root cause of dispute and violence. The reason behind this increased prevalence in young women is due to practicing of marriage in early age, which is quite high in the country. Another factor for higher incidence in females of fertile age groups is infertility (11).

Citing data from the National Family Health Survey (NHFS), SAHAJ came out with a report which said about Twenty-seven per cent of women aged 15 to 49 years have experienced physical violence since the age of 15 years (12). National Crime Records Bureau (NRCB) statistics show that cruelty by a partner or his relatives (46.8%) and dowry-related crimes (7.1%) account for more than half of the crimes related to domestic violence (13).

Injury patterns: There are injuries and injury patterns that have a high positive predictive value for child abuse. There are no such injuries or patterns that reliably predict domestic assault. Head, face, and neck injuries seem to be more common. However, the predictive values, specificities, sensitivities of these injuries are probably too low to reliably identify or exclude patients. Repeated attendance is more common. Most of the victims that were physically assaulted were beaten by fist, bamboo stick, iron rod, and shoes (11).

Consequences of domestic violence: Domestic violence is increasingly being recognized as a significant public health issue. Domestic violence is associated with more than just the physical injury. There is cohort evidence that female victims of domestic violence have increased use of all forms of medical care, not just trauma and mental health services.

How do a health care provider refer a patient who's been abused?

First, assure the patient that she does not deserve to be abused, that the situation is likely to get worse, and that if she is being hurt, her children are being hurt as well. Social workers may be able to offer counseling and help with information regarding "protection from abuse" (restraining

orders, shelters, etc.

Virtually every community has a domestic violence advocacy organization, as well, many of which print information that may be kept in clinicians' offices. All violence-related materials should be available in patient restrooms. If the patient has a partner who refuses to leave the examining room, the restroom may be the only site in the office where she has privacy.

Routine referral for couples counseling is to clinical psychologist/psychiatrist is recommended. If the patient discloses feelings of anger, for example, in a counseling session, her partner's abusive behavior may escalate. After the violence and the threat of violence has ceased, joint counseling-in some cases-may then be an option.

While clinicians are not expected to be domestic violence experts, they should have access to names and phone numbers of local hot lines, shelters, and other resources. There is also a national number by National Commission of Women & Child development, offering 24-hour information, counseling, and referral for victims of domestic violence and caregivers: Toll free Number: **1091** (14).

Screening for domestic violence: It seems that history taking and clinical examination is unsatisfactory for diagnosing domestic violence. Screening has been suggested for every patient who presents to an emergency department. This view is supported by numerous Indian agencies, including the Department of Women & Child development and the Indian Medical Association. The Department of Health & family welfare advocates that "routine enquiry"—that is, screening—for all women should be considered by healthcare professionals (2). Whether domestic violence fulfils the criteria for screening is controversial. Domestic violence is certainly an important condition, and certainly carries significant health consequences. Screening is probably acceptable to most patients attending an emergency department. It is less clear whether screening is acceptable to physicians and nurses. It could be argued that we do not know enough about the natural history of domestic violence to institute formal screening programs. We also do not know enough about the effectiveness of the interventions and organizations designed to help identified victims of domestic violence. Indeed, most studies of interventions to reduce domestic violence do not consider important outcomes, such as reduced exposure to violence. Many of the

organizations that help victims are charitably run and whether they could cope with the increased workload that a screening program would cause is unclear. Once domestic violence has been identified, there is a risk that interventions may provoke further violence, specific measures need to be in place to prevent this. At present it does not seem that there is enough evidence to support screening all patients or even all women attending emergency departments for domestic violence.

Medicolegal reporting of domestic violence

- Section 357C Criminal Procedure Code - Both Private & Public health professionals are obligated to provide treatment to injured (15).
- Denial of treatment by Hospital to survivors of physical assault with acid vitriolage & sexual assault survivors is punishable under Section 166 B IPC with imprisonment for a term which may extend to one year or with fine or with both (15).
- As per Section 164(A) of the Criminal Procedure Code, any Registered Medical Practitioner can conduct a medico-legal examination for injuries & abuse (15).

"Domestic maid violence"- medicolegal issues: Domestic maid violence is an assault and coercive behavior, which mainly includes physical, psychological and at times sexual too, by employer or household members of employer against a person(male/female) hired as a domestic help. There is no law to safeguard interests of domestic help in India, as it does not come under DV act. In the absence of a law to safeguard the rights of domestic workers, the employer can be booked under laws preventing child labor if a child below 14 years is employed as domestic help. For a child between 14 and 18 years of age, the Juvenile Justice Act comes into play. For crimes reported during medicolegal reporting by doctors in which the domestic help is an adult, various sections of the IPC under S. 320-328 IPC for physical assault & S. 375 IPC for sexual assault can be invoked by local police.

Key points: domestic violence

1. The highest risk for serious injury/death is when and after the abused leaves.
2. The incidence of domestic violence increases during pregnancy and postpartum.
3. Domestic violence screening involves asking a few simple non-judgmental questions each visit.

4. Once a patient divulges a history of domestic violence, she should be assured that she does not deserve to be abused and made aware of local resources for abused women.

5. The treating physician should resist the impulse to encourage the patient to leave the abusive relationship.

Conclusion

Domestic violence is often not disclosed to medical or nursing staff in emergency. Interviewing patients alone increases the chances of detection of domestic violence. If a patient discloses domestic violence, then the possibility that there are children at risk should be considered. It should be explained to victims of domestic violence that assault is illegal and unacceptable. Contact with the police and voluntary organizations should be offered from the safety of the emergency department. Future research should aim to describe the epidemiology of domestic violence and further evaluate the effectiveness of interventions. It is through these areas that the quality of care of victims of domestic violence can be improved.

Conflict of interest

None

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Practice before you teach - ethics in medical education

It is that time of the year when children aspiring to become doctors would be seeking admissions in the medical institutes of their choice. This will be followed by the excitement of joining a new college with new friends and new beginnings and new hopes. This is routine for every year, except that this time, the students will follow the brand new curriculum worked out by the Medical Council of India. The development is a long awaited change in the curriculum for the MBBS course.

In addition to the various competencies, knowledge and skills required for a medical graduate, the new curriculum called the Competency Based Integrated UG Medical Curriculum also devotes special time and focus on teaching of ethics in medical education, thus underscoring the importance of ethical values and sensitivity towards the needs of the patient and acquisition of communication skills. Teaching and learning of medical ethics, behavioral science, communication skills, and managerial skills were not emphasized or even offered a passing thought in the existing curriculum. Emphasis is put in the new curriculum on teamwork, professionalism, altruism and respect in professional relationships with due sensitivity to differences in thought, social and economic position and gender. It is well-known that by changing a person's attitude, his/her behavior can be changed. Ethical dimension of human interaction is very important for a physician and plays an important role in behavioral evolution.

Learning is nothing but close observation and imitation of the actions of teachers or peers. Students learn various aspects of the practice of

medicine by observing the teachers and imitating their practices, knowledge and even behavior. This is a great opportunity and responsibility for the current generations of teachers to ensure that the future generations of doctors are ethically considerate, communicative and empathetic with the patients. In the current society where moral values are at their nadir, doctor-teachers can act as a beacon of hope by themselves putting into practice the very ethics that they are supposed to teach the students so that they can be ideal practitioners of the art of medicine. Such behavior of the teachers is bound to rub on to the students and be copied and emulated by them in the practice of the profession. Towards this effect, all teachers require adequate training for effective implementation of the new curriculum. Hurried enforcement of the curriculum which may not be adequately understood by the teachers themselves may backfire and not produce the desired results.

With the efforts pitched in by the all medical teachers of the country, I hope the new curriculum achieves its goal of producing an "Indian Medical Graduate" with requisite knowledge, skills, attitudes, values and responsiveness along with the moral values of honesty, sincerity, integrity, respect, patience. Doctors of tomorrow should have the greatest respect for life, human rights, ethical practices towards the living as well as the dead.

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Instructions to authors

Preparing a Manuscript for Submission to International Journal of Ethics, Trauma, and Victimology

Unpublished original manuscript written in English should be sent to:

Dr. RK Gorea, Editor, International Journal of Ethics, Trauma & Victimology by email at editoretv@gmail.com

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The IJETV is the publication supported by SPIC & INPAFNUS, published since 2015.

The Contents of the Journal

The journal accepts a range of articles of interest, under several feature sections as follows:

- Original Papers: Includes conventional observational and experimental research.
- Commentary: Intended for Reviews, Case Reports, Preliminary Report, and Scientific Correspondences.

Letter to the Editor

Designed to be an avenue for dialogue between the authors of the papers published in the journal and the readers restricted to the options expressing reviews, criticisms etc. It could also publish letters on behalf of the current affairs in the field of Ethics, Trauma & Victimology

Editorial

Intended as a platform, for the Editor-in-Chief, and for others with a keen interest in Ethics, Trauma & Victimology that wished to comment on the current affairs.

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Intended for providing information of members and activities of the Society and other such other organizations affiliated to the Society may appear frequently and not in every issue.

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The text of observational and experimental articles is usually (but not necessarily) divided into the following sections: Introduction, Methods, Results, and Discussion.

This so-called “IMRAD” structure is not an arbitrary publication format but rather a direct reflection of the process of scientific discovery. Long articles may need subheadings within some sections (especially Results and Discussion) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, probably need to be formatted differently. Electronic formats have created opportunities for adding details or whole sections, layering information, cross-linking or extracting portions of articles, and the like only in the electronic version. Double spacing all portions of the manuscript— including the title page, abstract, text, acknowledgments, references, individual tables, and legends—and generous margins make it possible for editors and reviewers to edit the text line by line and add comments and queries directly on the paper copy. If manuscripts are submitted electronically, the files should be double-spaced to facilitate printing for reviewing and editing. Authors should number all of the pages of the manuscript consecutively, beginning with the title page, to facilitate the editorial process.

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of

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