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TR-08-98
Incidence of Human Bite Marks
in a Selected Adult Population

Dr. David Sweet
Bureau of Legal Dentistry
University of British Columbia

TECHNICAL REPORT
September, 1997

Submitted by:
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Bureau of Legal Dentistry
University of British Columbia

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Executive Summary

Prior to this study, no information existed to assist police investigations or support the testimony of odontologists concerning the incidence, frequency, or severity of this form of physical evidence. Dr. Sweet studied the incidence and severity of bite mark injuries to victims of violent crimes with the following results:

1. bite mark injuries occurred in 16% of domestic violence situations;
2. the vast majority of victims are women (93%) with the highest incidence in the 20-40 year age group;
3. injuries to the head and neck were the most frequent (42%) with contusions being the most common (47%).

Sommaire

Avant cette étude, on ne disposait d'aucune information pour faciliter les enquêtes policières ni pour appuyer le témoignage des odontologistes au sujet de l'incidence, de la fréquence ou de la gravité de cette forme d'indice physique. Le D^r Sweet a étudié l'incidence et la gravité des morsures infligées aux victimes de crimes violents et il a obtenu les résultats suivants :

1. des blessures dues à des morsures surviennent dans 16 % des cas de violence conjugale;
2. la grande majorité des victimes sont des femmes (93 %) et l'incidence la plus forte correspond au groupe d'âge de 20 à 40 ans;
3. les blessures à la tête et au cou sont les plus fréquentes (42 %), les contusions étant les plus courantes (47 %).

Incidence of Human Bite Mark Injuries in a Selected Adult Population

David Sweet, D.M.D., Ph.D., D.A.B.F.O.
Bureau of Legal Dentistry, Vancouver, BC

Final Report

September 22, 1997

A negotiated research project between the Canadian Police Research Centre and the Bureau of Legal Dentistry was conducted from May 26 to August 29, 1997. This project included the employment of two female undergraduate dental students to act as research assistants to collect, collate and interpret data from the Domestic Violence Program at the Vancouver General Hospital (VGH), Vancouver, BC.

The project was to be conducted over a three-month period on site at VGH and at the Bureau of Legal Dentistry Laboratory (BOLD) at the UBC campus. Research assistants carried a pager and were summoned to the VGH Emergency Department as required. Additionally, a comprehensive review of the database of victims of domestic violence stored at VGH was completed.

This research initiative was jointly funded by:

- a) the Canadian Police Research Centre (CPRC) (one research assistant salary),
- b) the College of Dental Surgeons of British Columbia (second research assistant salary), and
- c) the BOLD laboratory (capital costs and overhead).

An executive summary of the project was submitted to CPRC on September 3, 1997 along with an invoice for the CPRC's share of the project costs. It was agreed that the final report was to be submitted on or before September 30, 1997.

1. Objectives

Four research objectives were identified:

- 1) to formulate a questionnaire and examination protocol to collect data with respect to the frequency, severity, and location of bite marks and the related injuries of abuse.
- 2) to study the incidence of bite mark physical evidence and other traumatic injuries observed on the bodies of victim's of domestic violence admitted to a major hospital's emergency room.
- 3) to complete a retrospective review of the existing database of the injuries recorded in previous domestic violence cases.
- 4) to become familiar with the distribution, severity and type of physical injuries associated with domestic violence, especially spousal abuse.

2. Research Involving Human Subjects: Ethics Approval

A request for an ethical review of the research proposal was submitted to the UBC Behavioural Research Ethics Board on May 8, 1997, and to the VGH Ethics Board on May 12, 1997. The proposed patient questionnaire and informed consent to participate were reviewed by these groups. Please see appendix 1.

Final approval from UBC was granted on June 6, 1997 and from VGH on July 8, 1997
Please see appendix 2.

RESULTS

New Patients Entering Domestic Violence Program

Unfortunately, only two out of the many new patients entering the program during the three-month study interval agreed to participate in the research project. Subsequently, it was determined that these two individuals were not suitable under the terms of the exclusion criteria previously established. These individuals did not become subjects in the study.

Database of Previous Cases

A total of 1,294 cases of domestic violence compiled in the VGH Domestic Violence Program database were reviewed and examined. From these, 400 cases were randomly selected as a representative sample. Data dealing with the prevalence, incidence, severity, and anatomical location of injuries as well as victim and perpetrator demographics was assessed. Please see compiled results in the following tables and figures:

Table 1 - Victim and Suspect Demographics

<u>Gender (Victim)</u>	<u>Percent (%)</u>
Female	93
Male	7

<u>Gender (Suspect)</u>	<u>Percent (%)</u>
Female	8
Male	92

Table 2 - Victimology (Chronological Age)

<u>Age (years)</u>	<u>Percent (%)</u>
< 16	1
17-25	27
26-35	34
36-45	24
46-55	9
56-65	2
> 65	3

Table 3 - Victimology (Ethnicity)

<u>Ethnic Group</u>	<u>Percent (%)</u>
White	42
Native	31
Oriental	18
Negroid	9

Table 4 - Anatomical Location of Domestic Violence Injuries

<u>Location</u>	<u>Percent (%)</u>
Head-Neck	42
Trunk	20
Upper Limb	25
Lower Limb	13

Table 5 - Types of Injuries Observed (n= 868)

<u>Type of Injury</u>	<u>Percent (%)</u>
Swelling, Redness	4.3
Contusion	47.2
Abrasion	9.9
Laceration, Penetrating	10.4
Burns	1.2
Fracture, Pneumothorax	5.2
Avulsion	0.7
Pain, Tenderness	21.1

(Bite marks present in 16% of all cases)

Figure A - Distribution of Injuries by Frequency of Occurrence

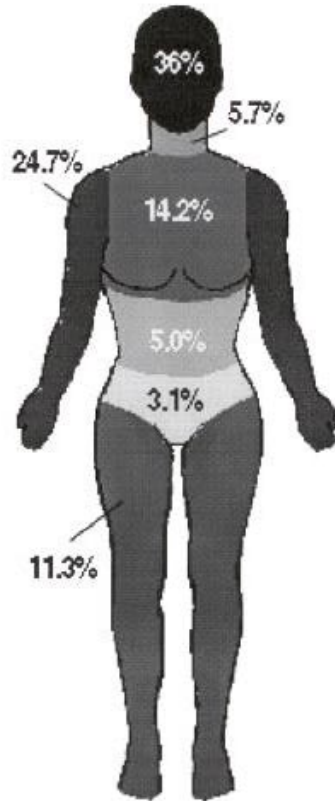


Figure B - Example of Human Bite Mark in Case of Domestic Violence



Conclusions

1. The vast majority of the victims of domestic violence are women (93%). The majority of the perpetrators of domestic violence are men (92%).
2. More than 4 out of 10 victims of domestic violence sustain injuries to the head and neck (41.7%). This is of particular interest to dental practitioners since these injuries are visible during routine dental treatment. Proper recognition by dentists and subsequent reporting will result in disruption of the cyclical and episodic nature of spousal abuse and domestic assault.
3. Contusions are the most frequent type of injury in domestic violence (47.2%).
4. Bite mark injuries are not uncommon in situations of domestic violence. More than one in ten victims exhibited at least one bite mark injury (16%).
5. The highest incidence of bite mark injuries was observed in the category involving young female victims (20-40 years).

Acknowledgments

Dr. Sweet is grateful to the Canadian Police Research Centre for its support and assistance in completing this project. There seemed to be an unusually high amount of confusion in the early stages of the project, possibly as a result of miscommunication. However, things began to fall into place once the details of the agreement were worked out.

For their efforts as research assistants responsible for collecting, interpreting and entering data, the assistance of Cheri Porth, Rita Anand and Linda Mulligan is gratefully acknowledged.

Appendix 1

Date: _____ Code No.: _____

Database Observations

Incidence of Bite Mark Injuries in a Selected Adult Population

Investigators

Dr. David Sweet

Bureau of Legal Dentistry Laboratory

Telephone 822-8822

Dr. Anton Grunfeld

VGH Division of Emergency Medicine

Telephone 875-4111 (ext. 2847)

VICTIM

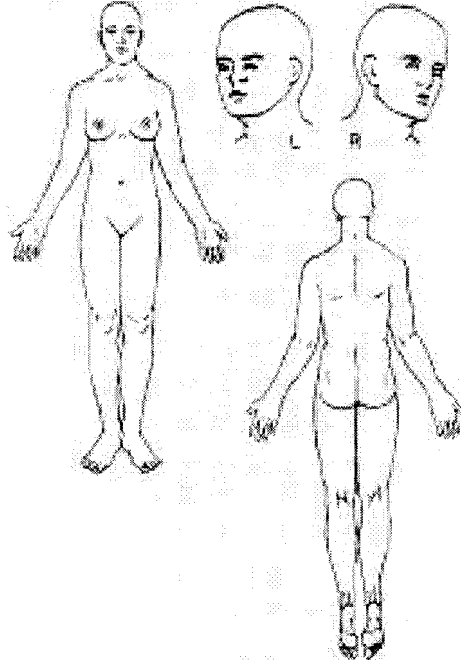
1. Date of Birth: _____ Age: _____
Ethnicity: White (); Black (); Aboriginal (); Oriental ()
Gender: Male (); Female ()
2. Circumstances of assault: _____

3. Bites present?: Yes (); No (); Number: _____

SUSPECT:

1. Is identity of assault suspect known?: Yes (); No ()
2. Age: _____
Ethnicity: White (); Black (); Aboriginal (); Oriental ()
Gender: Male (); Female ()
3. Relationship to victim: _____
4. Does suspect have own front teeth (if known)?: Natural teeth (); Dentures ()

Anatomical location (place X on diagram):



Severity of bite (mark X):

[least severe] | _____ | _____ | _____ | [most severe]

Other associated injuries (place A, B, C, etc. on previous diagram):

Describe these injuries: A =
B =
C =
D =

Previous attacks?:

Yes (); No ()

Elapsed time interval: Years (); Months (); Weeks (); Days ()

Circumstances (similar/different?) : _____

Bites?: Yes (); No ()

Other associated injuries: _____

Informed Consent Form

Incidence of Human Bite Mark Injuries in a Selected Adult Population

Principal Investigator:

Dr. David Sweet, DMD, PhD, DABFO, Director, Bureau of Legal Dentistry Laboratory, UBC Faculty of Dentistry, phone 822-8822.

Co-Investigators:

Dr. Anton Grunfeld, MD, FRCPC, Division of Emergency Medicine, Department of Surgery, Vancouver General Hospital, phone 875-4995.

Purpose:

The aim of this project is to study forensic bite mark evidence in cases of domestic violence. Bites are thought to be common in such crimes. They are usually the result of aggressive behaviour by the attacker and are found on the victim (offensive bites). In some cases, teeth are the only weapons available to the victim and bites are found on the attacker (defensive bites). Bites are examples of physical evidence. They can be analyzed to obtain conclusions about a suspect's involvement in a violent attack. With growing interest and concern regarding violence in Canadian homes, this project will provide conclusions about the frequency, severity, location and forensic significance of these types of injuries.

Interviews and examinations will be completed on assault victims identified by the Domestic Violence Program, Vancouver General Hospital. Data will be recorded for each participant regarding the type of assault, the presence of other associated injuries, and information about the participant (age, gender, etc.).

Study Procedures:

Victims of domestic violence who arrive at the Emergency Department of the Vancouver General Hospital for treatment will be asked to complete the following two procedures, These activities occur during the initial hospital visit:

1. Two female undergraduate dental students will act as research aids to assist each participant to answer a questionnaire about the circumstances of the attack, the location and severity of any injuries sustained during the attack, and whether any bites occurred during the attack. This procedure will take approximately 5 minutes.
2. The research aids will examine and record the physical injuries reported by the victim including bruises, scratches, scrapes, and cuts, etc. This will include measurements and drawings as well as orientation and close-up photographs. This procedure will take approximately 3-4 minutes per injury site.

Confidentiality:

Any information resulting from this study will be kept in the strictest confidence. Specific cases will be identified using a code number; the victim's name or other personal information will NOT be recorded. Therefore, participants will not be identified by name in any reports of the completed study. After the study is completed and the data analyzed, the results may be published in the scientific literature. However, no reference will be made to any participant by name or code number, or in any other way.

Remuneration/Compensation:

Individuals will be asked to volunteer to participate. No remuneration or other compensation of any kind is expressed or implied.

Contact:

If the participant has any questions, or desires further information with respect to this study, the participant may contact Dr. David Sweet or one of his research assistants at 822-8822.

If the participant has any concerns about his/her rights as a voluntary research subject, the participant may contact the Director of Research Services at the University of British Columbia, Dr. Richard Spratley at 822-8598.

Consent:

I understand that my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without jeopardizing further services at the Vancouver General Hospital.

I have received a copy of this consent form for my own records.

I consent to participate in this study.

Signature of Participant: _____ Date: _____

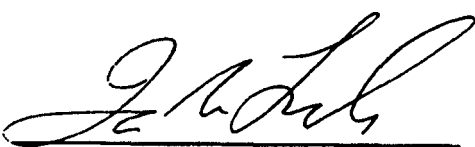
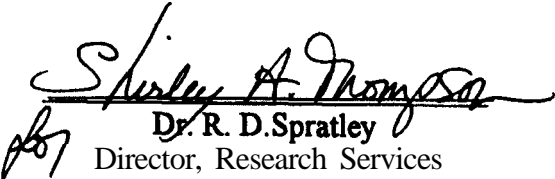
Signature of Witness: _____ Date: _____

Appendix 2



The University of British Columbia
 Office of Research Services and Administration
 Behavioural Research Ethics Board

Certificate of Approval

PRINCIPAL INVESTIGATOR Sweet., D.	DEPARTMENT Oral Medicine and Surgical Sci	PROJECT NUMBER B97-0191
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT VHSC		
CC-INVESTIGATORS: Grunfeld, A.F., Surgery		
SPONSORING AGENCIES (Canadian Police Research Centre)		
TITLE Incidence of Human Bite Mark Injuries in a Selected Adult Population		
APPROVAL DATE JUN - 8 1997	TERM (YEARS) 3	AMENDMENT APPROVED:
CERTIFICATION: <p style="text-align: center;">The protocol describing the above-named project has been reviewed by the Committee and the experimental procedures were found to be acceptable on ethical grounds for research involving human subjects.</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  Dr. I. Franks or Dr. R. Johnston, Associate Chairs </div> <div style="text-align: center;">  Dr. R. D. Spratley Director, Research Services </div> </div> <p style="text-align: center; margin-top: 20px;">This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures</p>		



FACULTY OF MEDICINE
THE UNIVERSITY OF
BRITISH COLUMBIA

VICE PRESIDENT, RESEARCH
VANCOUVER HOSPITAL
& HEALTH SCIENCES CENTRE

ASSISTANT DEAN, RESEARCH
FACULTY OF MEDICINE
THE UNIVERSITY OF BRITISH COLUMBIA

DAVID J. McLEAN, M.D., FRCPC

July 8, 1997

Dr. David Sweet
Department of Dentistry
VHHSC

Dear Dr. Sweet:

Re: Vancouver Hospital Research Project - FINAL APPROVAL

TITLE: Incidence of human bite mark injuries in a selected adult population,

This is to inform you that your project has been approved and can start immediately. Approval has been granted until **June 6, 2000** based on the following:

1. UBC Ethics Committee Certificate of Approval, #B97-0 19 1
2. VHHSC Research Advisory Committee Approval, #V97-0098

Yours truly,

A handwritten signature in cursive script that reads "David McLean".

Dr. David McLean
Vice-President Research

cc: Dr. Roy Pursell, Head, Department of Emergency Medicine

fomll.97