

Emergency management of dental trauma: knowledge of Hong Kong primary and secondary school teachers

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Objectives To investigate the level of knowledge about emergency management of dental trauma among Hong Kong primary and secondary school teachers.

Design Questionnaire survey.

Setting A teachers' union that unites 90% of teachers in Hong Kong.

Participants Randomly selected primary and secondary school teachers.

Results Only 32.8% of respondents correctly stated that a person sustaining dental trauma should go to dentists directly. In all, 73.1% of teachers correctly stated that a dental trauma patient should go for treatment immediately. Only 32.5% knew that a fractured tooth should be put in liquid. Even fewer (23.2%) realised that the displaced tooth should be repositioned back to the original position. Relatively more respondents (74.7%) understood that an avulsed baby tooth should not be put back. Disappointingly, only 16.3% of teachers knew that an avulsed permanent tooth should be replanted. Furthermore, only 29.6% of teachers thought that they were able to distinguish between deciduous teeth and permanent teeth, whilst 20.4% correctly identified at least one of the appropriate mediums: milk, physiological saline or saliva, for storing an avulsed tooth. Teachers who previously received first-aid training with dental content or acquired dental injury information from other sources, scored significantly higher than teachers without such training or acquired information.

Conclusion The knowledge on emergency management of dental trauma among primary and secondary school teachers in Hong Kong is insufficient, particularly on the handling of permanent tooth avulsion and the appropriate storage medium for avulsed teeth. Receipt of first-aid training with dental contents and acquisition of dental injury information from other sources were positively correlated with knowledge in managing dental trauma.

Key words

Emergency treatment; Health education, dental; Tooth avulsion; Tooth fractures; Tooth injuries

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New knowledge added by this study

- Knowledge regarding emergency management of dental trauma of primary and secondary school teachers in Hong Kong was found to be grossly insufficient.
- Most teachers thought dental trauma patients should go to casualty and some of them thought patients should go to private physicians.

Implications for clinical practice or policy

- Educational campaigns about dental trauma emergency management should be launched for teachers in Hong Kong.
- Educators should inform teachers that the patient should go to dentists directly and immediately whenever a dental injury is sustained.
- Dentists should suggest teachers and other health professionals to add dental trauma emergency management in the undergraduate and continuous professional development curricula.

Introduction

Traumatic dental injuries are common.¹⁻¹³ A review of the literature from 1995 to 2007 shows that the prevalence of traumatic dental injuries in primary and permanent teeth

is high throughout the world.² Statistics from most countries show that one fourth of all school children and almost one third of adults have suffered trauma to their permanent dentition, but there are variations among and within countries.²

Falls,⁴⁻¹⁶ sports,^{4,5,7-9,11,15,16} collisions,^{5,11,13,14} physical leisure activities,^{5,7,13-15} being struck by an object,^{6,8,13} and traffic accidents^{4,7} are the major causes of traumatic dental injuries. Among them, fall is the main cause.^{6,8-13,15,16}

Home^{8,9,11-14} and school^{8,9,11-13} are the most common locations where traumatic dental injuries occur. For children and adolescents, parents and teachers are usually nearby when the accidents occur. In this connection, their knowledge about the management of traumatic dental injuries is vitally important for the prognosis of injured teeth and in helping the injured person to receive appropriate first-aid treatment as soon as possible. However, many studies reveal that the teachers lack such knowledge on the management of traumatic dental injuries.¹⁷⁻²⁶

A survey on knowledge of physical education teachers in secondary schools about the emergency management of dental trauma in Hong Kong was published about 10 years ago.¹⁷ It revealed that their level of knowledge about the management of dental injuries was insufficient. Although educational campaigns were recommended in that paper, no campaign targeting the teachers was launched.

This survey targets a broader population of primary and secondary school teachers in Hong Kong because falls, collisions, physical leisure activities, and being struck by an object are common within school environments. The results of this study are also important for the Education Bureau in providing resources to equip school teachers with appropriate knowledge and for the dental profession to provide suitable training for school teachers.

The objectives of this study were: (1) to investigate the level of knowledge about the emergency management of dental trauma of primary and secondary school teachers in Hong Kong, and (2) to investigate whether the primary and secondary school teachers think that they can distinguish between permanent and deciduous teeth.

Methods

This research project was approved by the Institutional Review Board of the University of Hong Kong and the Hospital Authority's Hong Kong West Cluster.

Subjects

The targeted group included teachers working in primary (US grade 1-6) and secondary (US grade 7-12

香港中小學老師對緊急處理牙齒創傷的認識的調查

目的 研究香港中小學老師對緊急處理牙齒創傷的知識水平。

設計 問卷調查。

安排 一個有全港九成老師為會員的教師協會。

參與者 隨機抽樣的中小學老師。

結果 只有32.8%參與老師正確指出牙齒創傷的傷者應直接往牙醫處診治。73.1%正確回答傷者應立刻尋求治療。32.5%知道應把斷裂的牙齒放入液體內。23.2%知道應嘗試把移了位的牙齒放回牙床原位。74.7%知道不應把撞傷後飛脫了的乳齒放回牙床原位。只有16.3%老師知道應把撞傷後飛脫了的恆齒放回牙床原位。29.6%老師認為自己能夠分辨乳齒及恆齒。20.4%老師正確指出其中一項或以上儲存飛脫牙齒的液體，它們分別為牛奶、生理鹽水或口水。曾接受急救訓練而當中包括牙齒創傷及曾從其他途徑獲得牙齒創傷知識的老師均得較高分數。

結論 香港中小學老師對牙齒創傷的認識不足，其中對處理飛脫恆齒及儲存飛脫牙齒的液體認識特別不足。曾接受急救訓練而當中包括牙齒創傷及曾從其他途徑獲得相關知識的與對處理牙齒創傷有較深認識相關。

plus 1 year) schools in Hong Kong, who could read Chinese or English.

Sample size calculation

For each question, we were interested in the proportion of teachers giving the correct answer. For the calculation of sample size, we used a confidence level of 95% and an absolute precision of 0.05. As the population variance was unknown, we adopted $P = 50\%$ to allow for the largest possible variance. Assuming an infinite population size, a sample size of 385 was required. In order to allow for missing answers, an extra 20% was recruited. The final sample size opted for was therefore 462 teachers.

Questionnaire design

The questionnaire was written in Chinese and English and was composed of two sections with a total of 14 questions. The first section included basic demographic information, whether the respondents had received formal first-aid training or acquired dental trauma information and whether they thought that they could distinguish deciduous teeth from permanent teeth. The second part consisted of questions about management of dental traumatic injuries.

The marking scheme is tabulated. For Q9 to Q13, 1 mark was given for a correct answer, 0 for "do not know" and -1 for an incorrect answer. If multiple answers were chosen, -1 was given if an incorrect answer was chosen. There were three correct answers for Q14 as the media for storing avulsed teeth. As avulsion is the most serious dental trauma, it is necessary to manage this emergency correctly at once, in order to save the tooth. The more storing media the teacher knows, the more likely he/she can find one soon enough to keep the vitality of the periodontal cells on the root surface, which improves the prognosis. Therefore, 1 mark was given for a correct answer but 1 mark was deducted for an incorrect answer. Multiple answers were allowed.

Validation and reliability of questionnaire

The questionnaire was pilot-tested on 81 teachers, by which its length and whether the targeted recipients could comprehend it were pre-tested before adoption. The face validity was established by expert opinion. The reliability of the questionnaire was tested on 41 teachers from a local school. They filled in the questionnaire twice, the second being completed 14 days after the first, and the 40 paired questionnaires were analysed for test-retest reliability using the paired *t* test.

The mean difference between the scores from the first and second questionnaires was 0.275, with the 95% confidence interval being -0.464 and 1.014. The *P* value of the *t* test was 0.4559, which indicated that the mean difference between their scores was not significantly different from 0 even at a 40% significance level. The Pearson's product moment correlation coefficient was 0.6887 which indicated that the scores of the first and second questionnaires were positively correlated.

Recruitment

The Hong Kong Professional Teachers' Union includes approximately 90% of all teachers in Hong Kong, and has over 70 000 members.²⁷ The Union assisted the selection and mailing to the primary and secondary school teachers. Each batch of 1000 members from the pool of the primary and secondary schools, identified by their unique membership numbers, was sampled by simple random sampling, using computer-generated random numbers.

The mailings were sent to 1000 randomly selected primary and secondary school teachers as a batch. The information being sent included an introductory letter from the Union, an invitation letter from the investigators, the questionnaire, and a pre-paid return envelope. The teachers returned the completed questionnaire to the investigators directly

with no marking indicating which teacher made the reply using the return envelope.

The Union sent the first batch on 28 April 2011 and 169 questionnaires were returned; 232 more questionnaires were returned after the second batch of 1000 different teachers was sent. As the required sample size was not yet reached, the third 1000 was sent, and in total 616 questionnaires were returned on 20 July 2011. No reminders were sent because the Professional Teachers' Union regarded repeated mailings to the same teacher as an irritation. According to the Privacy Ordinance in Hong Kong, only authorised persons in the Union could access the information of its members, therefore the random selection and sending process was solely performed by the Union and this point was mentioned in the two letters.

Withdrawal of teachers from the study

The participating teachers could ignore the invitation mailing or might return the blank questionnaire by the return envelope.

Statistical analyses

For each question concerning knowledge about dental trauma, the number and proportion of respondents who chose the correct answer(s) was/ were reported.

To investigate the effects of the demographics and educational background on the knowledge, a multiple linear regression on the total score was conducted, with independent variables of gender, age, years of teaching, school type, receipt of first-aid training, dental injury content in first-aid training, confidence in distinguishing the type of teeth, and acquisition of dental injury information from other sources. The two variables, receipt of first-aid training and the presence of dental injury content in first-aid training, were jointly represented by two dummy variables, X_5 and X_6 . The definitions were: $X_5 = 1$ if the respondent received first-aid training but without dental injury content, and $X_5 = 0$ if the respondent had not received first-aid training. $X_6 = 1$ if the respondent had received first-aid training with dental injury content, and $X_6 = 0$ if the respondent had not received first-aid training.

A Pearson's Chi squared test was also conducted to evaluate the association between the confidence in distinguishing between deciduous and permanent teeth and the knowledge of correct treatment of avulsed deciduous and permanent teeth. The thresholds of all the statistical tests were set at a significance level of 5%. The statistical analyses were performed using a computer program (JMP version 9.0.2, SAS Institute Inc, US).

Results

A total of 616 filled questionnaires were collected, giving a response rate of 20.5%. After excluding questionnaires with missing entries in the first section (demographics and background information), there were 594 for analysis. The statistics of the respondents' background information is shown in Table 1. Of these respondents, 71% were female, 66.1% were in the age range of 31 to 50 years, 98% had not worked in other vocations; the average years of teaching experience was 17.2 (standard deviation, 8.7)

TABLE 1. Demographics and characteristics of respondents (n=594)

Demographics/characteristics	No. (%) of respondents
Gender	
Male	172 (29.0)
Female	422 (71.0)
Age-group (years)	
≤20	0
21-30	70 (11.8)
31-40	167 (28.1)
41-50	226 (38.0)
51-60	129 (21.7)
≥61	2 (0.3)
Years of teaching	17.2 ± 8.7*
1-10	151 (25.4)
11-20	241 (40.6)
21-30	165 (27.8)
31-40	37 (6.2)
≥41	0
School type	
Primary schools only	239 (40.2)
Secondary schools only	333 (56.1)
Both types of schools	22 (3.7)
Received first-aid training	
Yes	304 (51.2)
No	290 (48.8)
Learnt dental injury management in first-aid training	
Yes	50 (8.4)
No	544 (91.6)
Confident in distinguishing types of teeth	
Yes	176 (29.6)
No	418 (70.4)
Read or heard dental injury information besides that from first-aid training	
Yes	68 (11.4)
No	526 (88.6)

* Mean ± standard deviation

years. Moreover, 40.2% had taught in primary schools only, 56.1% had taught in secondary schools only, and 3.7% had taught in both. In all, 51.2% had received previous first-aid training, but only 8.4% had learnt about dental injuries in their training programme, and 29.6% of the respondents claimed that they were able to distinguish deciduous from permanent teeth. Lastly, 11.4% of the respondents had acquired information about dental injury management besides that from first-aid training programmes.

To compare our final sample with the whole teacher population, the demographic information on Hong Kong primary and secondary school teachers was obtained from the Hong Kong Education Bureau. The Bureau did not obtain comprehensive information from all these teachers; only information on gender and the school type (primary/secondary) was complete. The differences between the proportions of the population and the sample were measured using an effect size measurement Cohen's *h*. The smaller the effect size, the more closely the sample resembled the corresponding population proportion. According to Cohen, an effect size smaller than 0.2 is classified as small.²⁸ These statistics are shown in Table 2.

The distribution of gender and school type of the sample closely resembled those of the population. The two effect sizes were both smaller than 0.2, indicating that the sample proportions did not differ much from the corresponding population proportions.

The distribution of responses to the questions is shown in Table 3.²⁹⁻³⁵ The correct answer(s) for each question is/are indicated. Some teachers chose more than one answer, and we classified the response incorrect if a wrong answer was chosen. Table 4 shows the choices in this respect. Most of the questions were answered incorrectly. Only 32.8% (195/594) of the respondents were able to correctly identify the appropriate place for treatment of a dental injury, though 73.1% (434/594) knew the suitable time for treatment. Only 32.5% (193/594) of the respondents

TABLE 2. Comparison of statistics of the subjects' population and the sample

	No. (%)		Effect size*
	Subjects' population	Sample	
Gender			
Male	18 121 (34.0)	172 (29.0)	0.11
Female	35 238 (66.0)	422 (71.0)	
School type [†]			
Primary	22 590 (42.3)	250 (42.1)	0.004
Secondary	30 757 (57.7)	344 (57.9)	

* Effect size smaller than 0.2 is classified as small²⁸

[†] If a teacher has taught in both types of schools, the one that he/she stayed longer is taken

TABLE 3. Options chosen in the knowledge section (with correct answer[s] indicated)

Questions in knowledge section*	%†
Q.9 Place for treatment	
Go to the casualty in the nearest hospital on foot or by any transport	30.1
Call an ambulance; go to the casualty in the nearest hospital	25.3
Go to the nearest private doctor	7.7
Go to the patient's family doctor	5.2
Go to a dentist‡	43.3
Treat it by self	1.7
Others	1.9
Do not know	4.1
Q.10 Time for treatment	
At lunch or after school	0.8
After plenty of rest	2.5
Within 24 hours	4.0
Within 48 hours	0.5
When the parent or guardian is free to bring the patient for examination and treatment	3.5
Any time when the patient feels relax and wants to have treatment	3.4
Within 4 hours	7.2
Immediately‡	74.7
Others	2.4
Do not know	4.0
Q.11 Immediate management of fractured teeth	
The fractured part is useless, ignore it	5.1
Try to find the fractured time, wrap it with gauze or tissue and bring it for examination and treatment	50.0
Put it in liquid medium and bring it for examination and treatment ^{30,31 †}	31.0
Others	3.9
Do not know	11.1
Q.12 Immediate management of displaced teeth	
Do not touch, let it remains in its new position	61.0
Try to put back to the original position ^{32 †}	3.5
Ask the patient to carefully clench one's teeth if it is possible ^{33 †}	20.9
Others	3.0
Do not know	13.0
Q.13i Should knocked-out baby teeth be put back to their original position?	
Yes	4.0
No ^{29,34,35 †}	74.6
Do not know	21.4
Q.13ii Should knocked-out permanent teeth be put back to their original position?	
Yes ^{29,31,34 †}	16.2
No	53.5
Do not know	30.3
Q.14 Medium for storing knocked-out teeth	
The tooth is useless, do not spend time to find it or to work on it	5.9
Gauze or tissue	40.1
Cold milk ^{29,31,34 †}	21.7
Physiological saline ^{29,31,34 †}	29.6
Patient's saliva ^{29,31,34 †}	7.1
Tap water	3.5
Distilled water	24.9
A container or plastic bag in dry condition	10.9
Disinfectant solution	5.2
Others	0.7
Do not know	15.2

* For Q9-12, 13i & 13ii, respondents should choose 1 answer but some respondents chose more than 1; for Q14, 1 or more options could be chosen. The numbers in superscript indicate the references

† The sum of the proportions for a question may be larger than 1 as respondents may have chosen more than one answer

‡ Correct answer for the question

TABLE 4. Score for each question in the knowledge section

Questions in the knowledge section*		No. (%); 95% CI†		
		Correct	Incorrect	Do not know
Q9	Place for treatment	195 (32.8); 0.290-0.366	372 (62.6); 0.587-0.665	27 (4.5); 0.028-0.062
Q10	Time for treatment	434 (73.1); 0.695-0.767	128 (21.5); 0.182-0.248	32 (5.4); 0.036-0.072
Q11	Management of fractured teeth	193 (32.5); 0.287-0.363	336 (56.6); 0.526-0.606	65 (10.9); 0.084-0.134
Q12	Management of displaced teeth	138 (23.2); 0.198-0.266	375 (63.1); 0.592-0.670	81 (13.6); 0.108-0.164
Q13i	Management of avulsed baby teeth	444 (74.7); 0.712-0.782	24 (4.0); 0.024-0.056	126 (21.2); 0.179-0.245
Q13ii	Management of avulsed permanent teeth	97 (16.3); 0.133-0.193	319 (53.7); 0.497-0.577	178 (30.0); 0.263-0.337
Q14	Medium for storage of avulsed teeth	121 (20.4); 0.172-0.236	398 (67.0); 0.632-0.708	75 (12.6); 0.099-0.153

* For Q9-12, 13i & 13ii, if more than one option, including an incorrect one, is chosen, the answer is considered as incorrect; for Q14, one or more options could be chosen. If any incorrect one is included, it is considered as incorrect

† CI denotes 95% confidence interval of the corresponding proportion calculated using normal approximation

possessed the knowledge of how to correctly manage fractured teeth. Only 23.2% (138/594) of the respondents knew how to manage displaced teeth, whereas 74.7% (444/594) correctly answered that avulsed deciduous teeth should not be replanted to the original position, but a comparatively smaller proportion (16.3%; 97/594) knew that permanent teeth should be replanted. Moreover, only 20.4% (121/594) of the respondents correctly identified at least one of the appropriate mediums for storing an avulsed tooth.

Total scores are shown in Table 5. The mean and median total scores were both negative, with values of -0.4108 and -1, respectively, which showed that the level of knowledge about dental injury treatment among teachers was insufficient.

Regression analysis results are shown in Table 6, and demonstrate that demographic background (gender, age, years of teaching, and school type) did not have significant effects on the knowledge of dental injury management. Also, X_5 was not significant, indicating that first-aid training without dental injury management education did not significantly affect the total score. Confidence in distinguishing the type of teeth was not significant ($P=0.0537$), which was slightly greater than the 5% significance level. On the other hand, prior first-aid training with dental injury content and acquisition of dental injury information from other sources were significant and positively related to higher scores.

A Pearson Chi squared test was conducted to assess the association between confidence in identifying the type of teeth (deciduous or permanent) and performance in Q13. The P value of the test was 0.2343. Therefore, although the proportion of teachers obtaining a positive score (score 1 or 2) to Q13 was larger for those who were confident in distinguishing the type of tooth (25.00% vs 23.68%), there was no evidence of a positive association between the two.

TABLE 5. Summary statistics of the total score of the respondents*

Statistics	Data
Minimum	-6
Maximum	8
Mean	-0.4108
Median	-1
Standard deviation	2.6840

* For Questions 9 to 13, 1 mark for a correct answer, 0 for do not know, -1 if any wrong answer is chosen (range: -6 to 6); for question 14, 1 for each correct answer, 0 for do not know, -1 for each wrong answer (range: -7 to 3). Range of total score of the whole questionnaire: -13 to 9

Discussion

This survey included randomly selected Hong Kong primary and secondary school teachers from The Hong Kong Professional Teachers' Union. The union recruited all employees in the education industry except self-employed private tutors, constituting about 90% of all teachers in Hong Kong.²⁷ The response rate of this study was 20.5%. For comparison with studies with similar backgrounds, a literature search with the words "teachers" and "Hong Kong" was conducted on PubMed. Only one study (conducted in 2005, with a response rate of 28.5%) that recruited primary and secondary teachers in Hong Kong could be found.³⁶ That study used the same recruitment method through the Hong Kong Professional Teachers' Union.

There were only two channels through which the investigators could contact the subjects on an individual level, namely the Education Bureau and teachers' unions. We first approached the Education Bureau, but they declined our request, stating that they never assisted the distribution of questionnaires for academic purposes. They also did not possess any research paper about teachers in Hong Kong. On the other hand, the Professional Teachers' Union recruited most teachers among the teachers' unions in Hong Kong.

TABLE 6. Relationship between total score and the independent variables

	Estimate	Standard error	95% Confidence interval	P value
Intercept	-1.5301	0.6126	-2.7038 to -0.3294	0.0128
Gender (0 = male, 1 = female)	0.0391	0.2537	-0.4582 to 0.5364	0.8775
Age-group	0.1495	0.2077	-0.2576 to 0.5566	0.4720
Years of teaching	-0.0006	0.0246	-0.0488 to 0.0476	0.9796
School type* (0 = primary, 1 = secondary)	-0.0260	0.2297	-0.4762 to 0.4242	0.9098
First-aid training and dental injury content				
X ₅ (0 = no first-aid training, 1 = first-aid training without dental injury content)	0.3981	0.2258	-0.0445 to 0.8407	0.0784
X ₆ [†] (0 = no first-aid training, 1 = first-aid training with dental injury content)	1.2680	0.4325	0.4203 to 2.1157	0.0035
Confidence to distinguish the type of teeth (0 = no, 1 = yes)	0.4686	0.2424	-0.0065 to 0.9437	0.0537
Receipt of dental injury management information from other sources besides first-aid training [†] (0 = no, 1 = yes)	1.3086	0.3453	0.6318 to 1.9854	0.0002

* If the teacher has taught in both types of schools, the one that he/she stayed longer is taken

[†] The independent variable is significantly different from zero at 5% significance

A voluntary, self-completed, individually responded to questionnaire survey was the best method we could use in this population but was prone to selection bias. The effect sizes shown in Table 2 were small showing that the sample was very close to the population in terms of the distribution of gender and the type of school (primary/secondary). We could not compare other variables like teaching experience and age, because complete sets of relevant information were not available from the most reliable sources, namely the Education Bureau, Census and Statistics Department, and the Professional Teacher's Union. A response rate of 20.5% is low, but speculation of whether there was over- or under-estimation of the level of knowledge without any grounds was unjustified.

We were basically interested in the effects of gender, age, teaching experience, school type, receipt of first-aid training with or without dental content, confidence to distinguish the type of teeth, and receipt of dental injury management information from other sources besides first-aid training. We therefore asked about these aspects and included them as independent variables in the regression analysis.

We were less interested in other factors, such as the subjects they were teaching and the experience of dental trauma by self, family members and friends, therefore we did not include them as separate independent variables in the regression analysis. In the original questionnaire, sources of dental trauma information besides first-aid training were asked about. The sources included: television, magazines, radio, school, poster, newspapers, internet, word of mouth, and others. If such learning was part of their training to become a physical education or biology

teacher, or linked to professional opinions or active searching in e.g. internet or first-aid books due to dental trauma by self, family members and friends, it was included in the last variable, acquisition of dental knowledge from other sources.

The present study revealed that knowledge about emergency management of dental trauma of primary and secondary teachers in Hong Kong is grossly insufficient (Tables 3-5). This result was similar to findings from other local and international studies, in which the subjects were present and future physical education teachers,^{17,21,37} school health teachers,¹⁸ school teachers, school staff, and teacher-students.^{19,20,22-26}

Permanent teeth should be replanted^{29,31,34,38,39} or should be placed in milk, physiological saline or saliva if immediate replantation is not possible.^{29,31,34,38,39} Deciduous teeth should not be replanted.^{29,34,35,38,39} Therefore, to carry out the most suitable emergency management it is necessary to distinguish between the two types. However, 70.4% (418/594) of the respondents stated that they could not distinguish deciduous teeth from permanent teeth (Table 1). It is therefore recommended that future educational materials should include the following advice: replant the tooth if one feels able to do so and confident that it is not deciduous, and if not – put it in milk, physiological saline or saliva.

From the multiple linear regression (Table 6), it was concluded that receipt of first-aid training with dental content and acquisition of dental injury information from other sources were important factors positively related to higher scores. On average, those who had received such training scored 1.4 points more than those who had not. Similarly, those who had acquired such information other than

through first-aid training scored 1.3 points higher on average. However, only 8.4% (50/594) learnt about dental injury management in first-aid training and only 11.4% (68/594) had acquired such information from other sources (Table 1). Therefore, educational campaigns should be launched in primary and secondary schools to enhance teachers' knowledge on this topic.

For those who received first-aid training, 83.6% (254/304) had never learnt about dental trauma management (Table 1). First-aid course coordinators should include dental injury treatment in their courses. Notably, the St John's Ambulance first-aid course providers added dental trauma content in 2010.

Only 32.8% (195/594) of respondents stated that it was correct to go to the dentists directly (Table 4) while most thought that doctors and nurses in casualty or in the private sector could help such patients (Table 3). Health educators should inform teachers that patients should go to dentists immediately when there are dental injuries. It is also recommended that the two local medical schools (as well as other educational institutions for nurses) add dental trauma emergency management to their undergraduate curricula and continuous professional development programmes.

In all, 25.3% (150/594) of teachers thought that it was correct to call an ambulance (Table 3). This message should be conveyed to the Fire Services Department, and first aiders should also be trained in dental trauma emergencies.

Conclusion

Knowledge regarding emergency management of dental trauma of primary and secondary school teachers in Hong Kong is insufficient. First-aid

training with dental content and acquisition of dental injury information from other sources positively correlated with the level of appropriate knowledge. An educational campaign dedicated to this topic is recommended for primary and secondary schools teachers. Dental trauma emergency management is recommended to be added to first-aid publications and as teaching for school teachers and health professionals.

Follow-up action

We have prepared a dental trauma emergency management educational poster with one side in English and the other in Chinese and sent four copies to each primary and secondary school in Hong Kong. The poster mentions that a patient should go to a dentist immediately following a dental injury. We advised the schools display the posters on the notice boards of teachers and in medical rooms. The poster was also sent to Fire Services Department, all casualties and universities which provide medical and nursing courses in Hong Kong. We have also sent letters to institutions requesting that course coordinators add dental trauma emergency management in the curricula of teachers and other health professionals.

Acknowledgement

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Declaration

We declare no conflict of interest as the study was self-funded by principal investigator.

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