



MEDICAL EMERGENCIES AT DENTAL OFFICE

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Abstract

Background- As medical emergency can occur any time so dentist should be prepared all time. So this study is attempted to evaluate the medical emergency which may occur mostly and preparedness and knowledge of dental practitioner.**Aim-** Aim of the study is to determine the knowledge of dental practitioner to manage medical emergencies at dental office. **Objective** - To investigate feature and frequency of medical emergencies and to determine knowledge and preparedness of dentist to manage medical emergencies at their dental office. **Methodology** -We conducted cross sectional study for the survey. The questionnaire comprising 20 questions was designed relating to medical emergencies that may occur in dental office, its precautions management and preparedness of dentist include. The questions were randomly circulated to approximately 250 dental student. Random participants responses were conducted. Descriptive analysis was done for the study. **Result** -The study shows 73.4% dentist /dental student faces syncope as a most common medical emergency at their dental office. 74.1% dentist are confident that they can handle any emergency at their dental office. while only 31.8% of dental student/dentist have attended emergency training program. **Conclusion-** We came to conclusions that syncope is most common medical emergency which dentist/dental student faces at their dental office. While this study reveals that not all the dentist or dental

students have attended the emergency training program so not all the dentist are able to handle any type of emergency at their dental office.

Keywords – Medical Emergency, Training , Medical history , Risk management , Drugs

Introduction-

An emergency may be any medical condition that demands immediate attention and successful management. Medical emergencies are rare situations that may occur unexpectedly in the dental clinic during dental treatment , before the treatment and after the treatment too.

In Japan, a study was conducted between 1980 and 1984 by the Committee for the Prevention of Systematic Complications During Dental Treatment of the Japan Dental Society of Anesthesiology, under the guidance and supervision of the Japanese Dental Society.[1] The results from this study showed that anywhere from 19% to 44% of dentists had a patient with a medical emergency in any one year. Most of these complications, approximately 90%, were mild, but 8% were considered to be serious.

Any response to an emergency medical situation will depend strongly on the situation, the patient involved and availability of resources to help them.

The main significance in the management of medical emergencies in the dental office/ clinic is preparation. It has been said that if you are prepared for the emergency the emergency ceases to exist.

The incidence of medical emergencies is unfortunately on the rise there are many reasons for this increase. This condition occurring in dental office due to various factors such as stress, over consciousness, impact of social environmental and behavioral factors etc.. fortunately some factors can minimize the occurrence of life threatening events such as pretreatment physical evaluation of each patient involving medical history questionnaire and physical examination with subsequent modifications to dental care to minimize medical risks if necessary.

Prospection of potential medical emergencies that may arise should be highlighted by taking thorough medical history which is revised updated and checked each time the patient present for treatment. It has been suggested that

presence of updated medical history may help to minimize risk of medical emergency occurring [2]

Medical emergencies that occurred in dental practices include vasovagal syncope, angina, hypoglycemia, asthma, epileptic seizure. Vasovagal syncope is most common emergency occurred. [3], [4], [5]

A patient could collapse on any premises at any time whether they have received treatment or not. It is therefore essential that all dentist must be trained in dealing with medical emergencies. [6]

Dentist have duty of care to ensure they provide an effective and safe service to their patient. Satisfactory performance in medical emergency in dental practice has wide ranging implications in terms of equipment, training standards of care risk management and clinical audit.

Risk management can play an important part in reducing risk of medical emergencies in dental practice. It is therefore recommended that all primary care dental facilities have process for medical risk assessment of their patient. [7]

The dentist has responsibility to recognize medical emergencies and initiate primary management procedures in an effort to reduce morbidity and mortality when such adverse events arise.

Dental practitioner should have knowledge about the medical emergencies, their causes, how to prevent them. They should know what is basic life support, what is CPR, when and how to give CPR. They should have complete knowledge about the drugs which are used in medical emergencies.

The primary aim of the study is to assess training and equipment of dental practitioners to face these situations and to evaluate their perceived competency to manage medical emergencies. The secondary aim to determine the incidence types and severity of medical emergencies.

Methodology-

We conducted cross sectional study. The questionnaire comprising 20 questions was designed relating to medical emergencies that may occur in dental office, its precautions management and preparedness of dentist include and circulate among the dental student and dentist.

The questions were randomly circulated to approximately 250 dental student. Random participants responses were conducted.

Descriptive analysis was done for the study.

Ethics- The Institutional Ethics Committee of the Maharashtra Institute of Dental Science and Research Latur under registration No. MIDSR/IEC/115/2023 approved the study.

Results –

The main purpose of the study was to provide an overview of the basic emergency drugs and equipment that should be present in dental practices and to discuss specific responses to some of the more common adverse medical events that can be encountered while providing dental treatment.

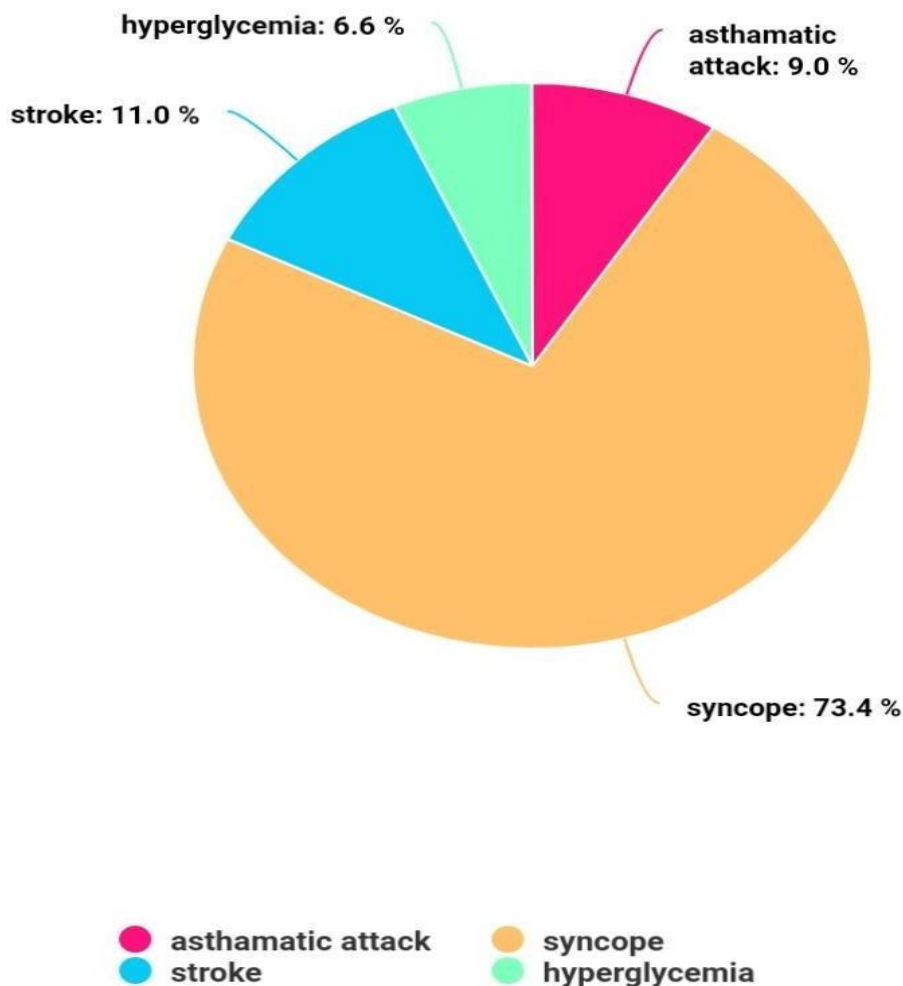
The total nu of 261 participants responses were collected. Among those 64% are female and 36 % are male.

Table no 1 :- Demographic profile

Gender	Percentage	Frequency
Male	36%	90
Female	64%	160

As per the study 73.4% dentist agreed to that syncope is the most common medical emergency which came across at their dental office.

Table no.2 :- showing result that syncope is most common medical emergency which come across.



As patient's history may help to minimize risk of medical emergency occurring. The study shows 95.8 % dentist enquire about medical history including medication and allergy but only 87.2 % patient give their proper health history to dental practitioner. It means emergencies which may arise are not only due to the dentist's negligence but also due to uncooperative patient.

According to study only 74.1% dental practitioners are confident that they can handle any emergency at their dental office. But not all the dental practitioners have attended any workshop on emergency training and management only 31.7 % practitioners have attended workshop remaining 68.3% do not have attended any workshop.

As any emergency could arise at any time practitioner must have ready to handle it with well equipped dental office. An emergency drug kit is also essential to manage emergency. The study shows 87.7 % of practitioners have emergency drug kit at their dental office it means remaining 12.3 % are depends on gen. physician which may arise risk. While only 70% and 71% of dental practitioners can give intramuscular and intravenous injection respectively.

As we said emergency could arise at any time and one should always be ready to handle emergency. Dental practitioner should also know how to give basic life support. And the study shows that 83.1% dental practitioners know how to perform basic life support which may avoid further complications.

Table no 3:- showing result in percentile of yes or no questions.

Questions	Yes	No
1. Do you enquire about medical history including medication and allergy	95.8%	4.2%
2. Do you obtain filled health history from patient	87.2%	12.8%
3. Do you check vital signs of patient before commencing any treatment	91.8%	8.2%
4. Do you think you can handle any emergency condition at your dental office	74.1%	25.9%
5. Have you attended any	31.7%	68.3%

workshop on emergency training and management programs		
6. Do you have any emergency drug kit at your dental office	87.7%	12.3%
7. Can you give an intramuscular injection	70.4%	29.6%
8. Can you give an intravenous injection	71.4%	28.6%
9. Do you know how to perform basic life support	83.1%	16.9%

According to this study 79.6% of dental practitioners gives correct answer regarding syncope or what to do if patient suffers from syncope that patient should be kept in Trendelenburg position and give ammonia inhalant. If patient is not responding even shaking and shouting then practitioners should start CPR and majority of practitioners give correct answer i.e 76.6%. CPR has to give patient if patient is not breathing, and in unconscious and pulseless patient.79.1 % practitioners knows when to give CPR and the protocols which are followed .

Vital signs are reassessed after every 10 -15 min during an emergency and only 46.2 % practitioners gives correct answer while remaining 53.8% practitioners are wrong.

Drugs which are given to patient if patient is suffering from medical emergency like cardiac arrest , asthmatic attack, hyperglycemia and hypoglycemia are atropine, salbutamol insulin and glucagon resp. And 83.3% , practitioners gives correct answer atropine, 77.3% , practitioners gives correct answer salbutamol 84.5

% practitioners gives correct answer insulin and 82.5% gives correct answer

glucagon remaining 18.7 % 22.7 % ,15.5% and 17.5 % resp. do not have that much knowledge about the drugs which used in emergency.

Table no 4:- showing result in percentile of correct or Incorrect answers

Questions	Correct	Incorrect
1. Immediate action if patient suffers from syncope when dental procedure is commenced.	79.6%	21.4 %
2. Immediate action after confirming patient is not responding even after shaking and shouting	76.6%	23.4 %
3. When will you give CPR	79.1 %	20.9%
4. During an emergency vital signs are assessed	46.2 %	53.8%
5. Protocols followed during medical emergencies in dental office	79.1 %	20.9 %

<p>6. As a dental practitioner which drug would you like to prefer to patient with medical</p>	<p>83.3 %</p>	<p>18.7 %</p>
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<i>emergency like cardiac arrest.</i>		
7. Which drug would you like to prefer to patient with medical emergency like asthmatic attack	77.3 %	22.7 %
8. what is sign of hypoglycemia	86.7%	13.3%
9. Which drug would you like to prefer to patient with medical emergency like hypoglycemia	82.5 %	17.5 %
10. Which drug would you like to prefer to patient with medical emergency like hypoglycemia	84.5 %	15.5 %

Discussion-

Dentist must first acknowledge the fact that emergency medical situations could arise for any patient during dental procedures. To prevent such adverse events in dental clinics, dental health practitioners must be able to recognize “at risk” patients, identify early signs of an adverse medical event, and rapidly initiate appropriate management.

In recent years, several publications on medical emergencies in dental clinics in different countries have appeared [10] Fortunately, most of those medical emergencies encountered by dentists are not life-threatening conditions and could be managed effectively by trained personnel

[9]. In fact, almost 90% of all those emergency episodes were considered mild and only 8% were regarded as serious



[9]. Dentists have the responsibility to recognize medical emergencies when they arise, in addition to their role in dealing with it in a competent, trained and professional way [9].

Our study also showed that the most frequently reported medical emergency in dental clinics was vasovagal syncope (73.4%). Syncope is described as a temporary loss of consciousness caused by a drop in the volume of blood that flows to the brain. This was followed by stroke (11.0%), asthmatic attack (9%) & hyperglycemia (6.6%). The similar study Ehigiator O et al. previous studies done in the United States and Canada have also shown that syncope is the most common medical emergency seen by dentists. [8]

The patients who are 'at risk' must be prior recognized by the dentist, but he must also know that any patient can anytime fall into an emergency condition. The study evaluated if the dentists in practice enquire the patients about the important points such as medical history and drug allergy if any. Responses from the participants It was seen that 95.8 of the dentists took the medical history. When it comes to checking for the vital signs about 87.2% did it. This will be a good help in knowing more about the patient and minimizing emergencies. A study conducted in Saudi Arabia in Jazan Province reported similar results in terms of taking full medical history [11]. Al-Iryani et al. [11] reported that 96% of the interviewed dentists in his study claimed they took detailed medical history, while only 4% did not. Al-Sebaei et al. also reported similar result in 2015 [12].

There is a need for medical emergency training program at under graduate level, this was supported by a studies done by Atherton GJ et al. in 2000, Adewole RA et al. in In the present study only 31.7% practitioner has undergone one or the other medical emergency and basic life support training and management programmes whereas a study done by G. J. Atherton et al found that 94.8% of respondents had undergone medical emergency and basic life support training programmes. Out of the 261 respondents who underwent the training programme majority of them 68.3% considered the programme as poor/moderate, only 31.7 considered the training program as good The result may be due to the lack of definitive guidelines about the training with medical emergencies in the dental curriculum. A New Zealand study showed more than 50% of dentists were dissatisfied with emergency

training & management programmes for medical emergencies and Brazilian practitioners were also found to be similarly unsatisfied.[15]

According to study of Moradi-Lakeh et al. in Saudi Arabia; In all cases of asthmatic attack a salbutamol inhaler with intra-nasal oxygen supplementation was provided, and patients made full recovery and were discharged home [14]. Likewise our study also shows most of the dentist preferred salbutamol (77.3%)

Furthermore, about 74.1%of the dentists in the current study reported that they can handle any emergency condition at their clinic.Although it is mandatory to have a medical emergency kit. 12.3% of the participant reported not having the essential emergency drugs kit for emergency in their dental clinics. This result was also similar to what was reported by Al-Hassan et al. [13] who found that 22% of dentists in Jazan Province did not have emergency kits in their offices.

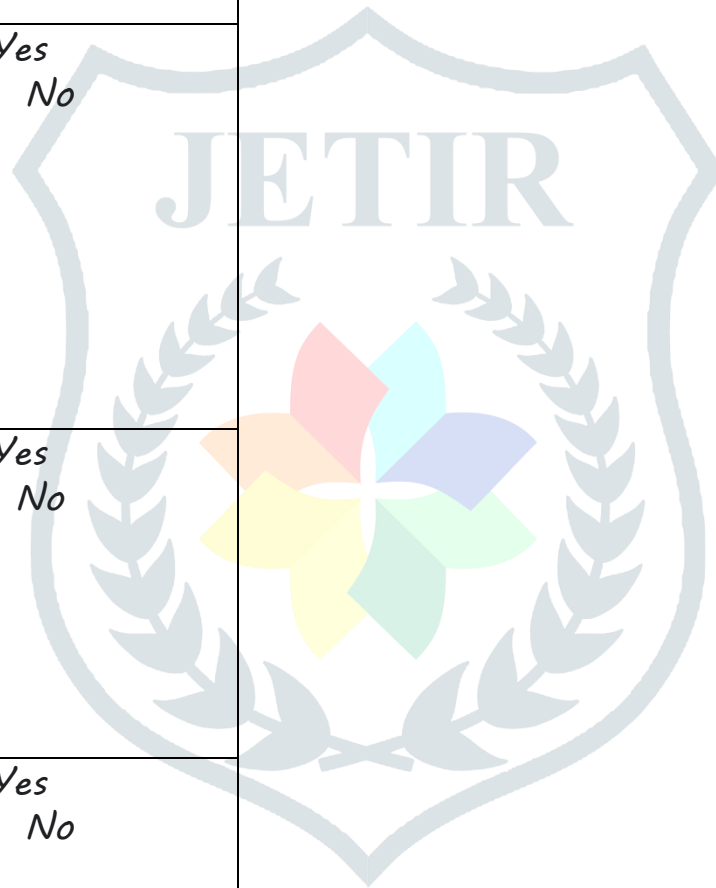
Conclusion –

With the help of study we came to the conclusion that vasovagal syncope is most common medical emergency which dental practitioner faces. As we previously said that updated medical history may help to minimize risk of medical emergency occurring. But the emergencies which may arise are not only due to not taking proper health history but also due to not getting proper filled health history from patient that is due to uncooperative patient. 74.1 % of dental practitioners are confident that they can handle any emergency at their dental office but very few dental practitioners have attended workshop on emergency training and management program. It means they thought they can handle any emergency but have to attend workshop on emergency training and management for handling emergencies. In the study we came to conclusion that majority dental practitioners have emergency drug kit at their dental office and also have knowledge when to use them but very few dental practitioners know that vital signs are reassessed after 10 -15 min. So they have need to be attend workshop on emergency training and management.

Table no 5:- Questionnaire-

Questions	Options
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<p>1) Which is the most common medical emergency do you faces at your dental office?</p>	<p>1) Asthmatic attack 2) Syncope 3) Stioke 4) Hypeiglycemia</p>
<p>2. Do you enquire about medical history including medication and alleigy.</p>	<p>1) Yes 2) No</p>
<p>3. Do you obtain filled health history from patient.</p>	<p>1) Yes 2) No</p>
<p>4. Do you check vital signs of patient before commencing any treatment.</p>	<p>1) Yes 2) No</p>



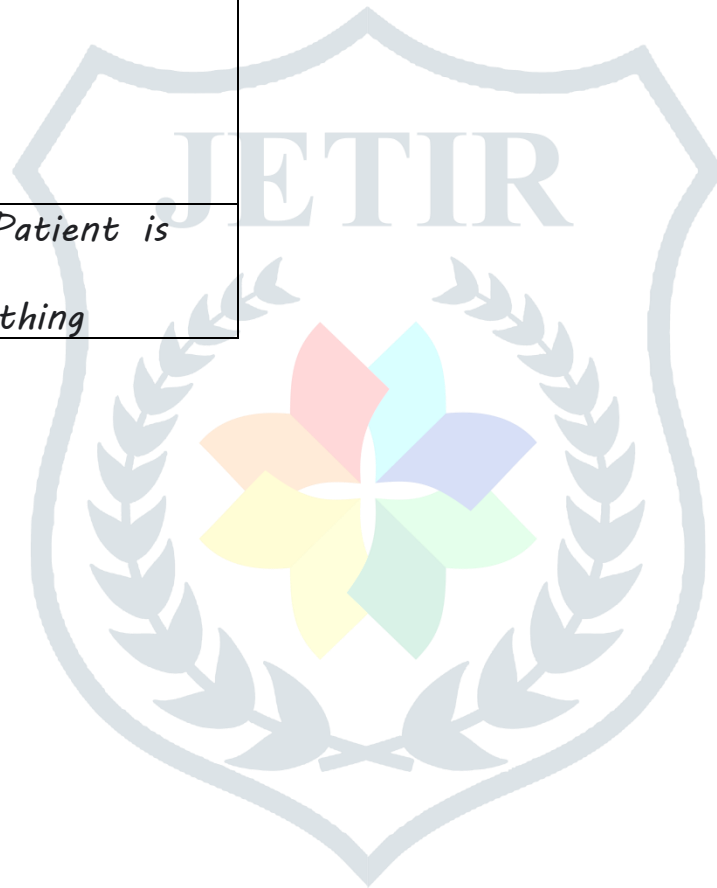
5. Do you think you can handle any emergency condition at your dental office.	1) Yes 2) No
6. Have you attended any workshop on emergency training or management programs	1) Yes 2) No



7. Do you have any emergency drug kit at your dental office?	1) Yes 2) No
8. Can you give an intramuscular injection?	1) Yes 2) No
9. Can you give an intravenous injection?	1) Yes 2) No
10. Do you know how to perform basic life support?	1) Yes 2) No
11. Immediate action if patient suffers from syncope when a dental procedure is commenced...	1) Continue dental procedure 2) Make patient sit in upright position 3) Make patient to stand 4) Place a patient in Trendelenburg position and give ammonia inhalant

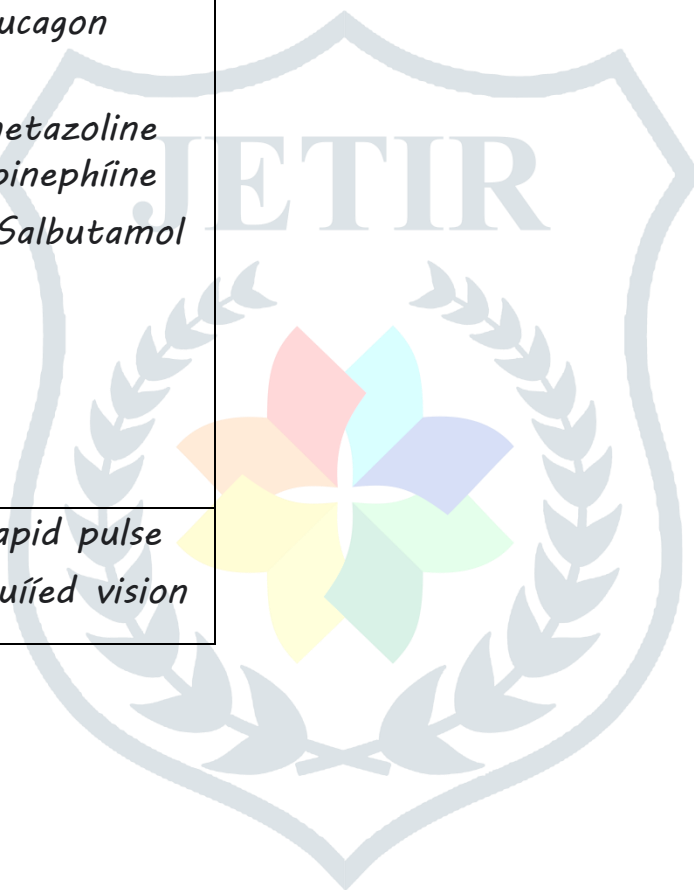


<p>12. Immediate action after confirming patient is not responding even after shaking and shouting</p>	<p>1) Start CPR 2) Active EMS 3) Put patient in recovery position 4) Observe</p>
<p>13. When will you give CPR ?</p>	<p>1) Patient is not breathing</p>



	<p>2) Patient is unconscious</p> <p>3) Pulseless patient</p> <p>4) All the above</p>
<p>14) During an emergency vital signs are reassessed</p>	<p>1) Constantly without pause</p> <p>2) Every 3-5 min</p> <p>3) Every 10-15 min</p> <p>4) Don't know</p>
<p>15) Protocols followed during medical emergencies in dental office</p>	<p>1) An emergency drug</p> <p>2) Well furnished dental office</p> <p>3) Best dental practitioner</p> <p>4) Both a and c</p>
<p>16) As a dental practitioner which drug would you like to prefer to patient with</p>	<p>1) Atropine</p> <p>2) Glucagon</p> <p>3) Oxymetazoline</p> <p>4) Metformin</p>

<p><i>medical emergency like cardiac arrest.</i></p>	
<p><i>17) Which drug would you like to prefer to patient with medical emergency like asthmatic attack.</i></p>	<p><i>1) Glucagon 2) Oxymetazoline 3) Epinephrine 4) Salbutamol</i></p>
<p><i>18) what is sign of hyperglycemia ?</i></p>	<p><i>1) Rapid pulse 2) Blurred vision</i></p>



	3) <i>Excessive thíust</i> 4) <i>Both 'b' and 'c'</i>
19) <i>Which díg would you like to píefeí to patient with medical emeígency like hypoglycemia?</i>	1) <i>Glucagon</i> 2) <i>Metfoímin</i> 3) <i>Insulin</i> 4) <i>None of these</i>
20) <i>Which díg would you like to píefeí to patient with medical emeígency like hypeíglycemia?</i>	1) <i>Insulin</i> 2) <i>Glucagon</i> 3) <i>Both 'a' and 'b'</i> 4) <i>None of these</i>

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