Survey on Gum Chews of Thirty-days
Results of a Questionnaire on Teeth
Fundamental Study of Quantitative Evaluation

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<tbody>
<tr>
<td>Dr. Apostolos Ch. Zarros</td>
<td>DM, Degree (Psychio) holder in Medicine, National and Kapodistrian University of Athens, MRRes, Master of Research in Molecular Functions in Disease, University of Glasgow FRNS, Fellow, Royal Numismatic Society Member, European Society for Neurochemistry Member, Royal Institute of Philosophy Scotland, United Kingdom</td>
</tr>
<tr>
<td>Dr. William Chi-shing Cho</td>
<td>Ph.D., Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong</td>
</tr>
<tr>
<td>Dr. Alfio Ferlito</td>
<td>Professor Department of Surgical Sciences, University of Udine School of Medicine, Italy</td>
</tr>
<tr>
<td>Dr. Michael Wink</td>
<td>Ph.D., Technical University Braunschweig, Germany, Head of Department Institute of Pharmacy and Molecular Biotechnology, Heidelberg University, Germany</td>
</tr>
<tr>
<td>Dr. Jixin Zhong</td>
<td>Department of Medicine, Affiliated Hospital of Guangdong Medical College, Zhanjiang, China, Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH 43210, US</td>
</tr>
<tr>
<td>Dr. Pejcic Ana</td>
<td>Assistant Medical Faculty Department of Periodontology and Oral Medicine University of Nis, Serbia</td>
</tr>
<tr>
<td>Rama Rao Ganga</td>
<td>MBBS, MS (University of Health Sciences, Vijayawada, India), MRCS (Royal Coilege of Surgeons of Edinburgh, UK), United States</td>
</tr>
<tr>
<td>Dr. Izzet Yavuz</td>
<td>MSc, Ph.D., D Ped Dent., Associate Professor, Pediatric Dentistry Faculty of Dentistry, University of Dicle Diyarbakir, Turkey</td>
</tr>
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<td>Sanguansak Rerksuppaphol</td>
<td>Department of Pediatrics Faculty of Medicine, Srinakharinwirot University, NakornNayok, Thailand</td>
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<td>Dr. Ivandro Soares Monteiro</td>
<td>M.Sc., Ph.D. in Psychology Clinic, Professor University of Minho, Portugal</td>
</tr>
<tr>
<td>Dr. Sanjay Dixit, M.D.</td>
<td>Director, EP Laboratories, Philadelphia VA Medical Center, Cardiovascular Medicine - Cardiac Arrhythmia, Univ of Penn School of Medicine, Web: pennmedicine.org/wagform/MainPage.aspx?</td>
</tr>
<tr>
<td>Antonio Simone Laganà</td>
<td>M.D. Unit of Gynecology and Obstetrics, Department of Human Pathology in Adulthood and Childhood “G. Barresi” University of Messina, Italy</td>
</tr>
<tr>
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<td><strong>Dr. Pina C. Sanelli</strong></td>
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<tr>
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<tr>
<td>Division of Neuromuscular Medicine</td>
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<tr>
<td>Davee Department of Neurology and Clinical Neurosciences</td>
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</tr>
<tr>
<td>Northwestern University Feinberg School of Medicine</td>
<td>NewYork-Presbyterian Hospital</td>
</tr>
<tr>
<td>Web: neurology.northwestern.edu/faculty/deng.html</td>
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</tr>
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<td></td>
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</tr>
<tr>
<td>Department of Structural and Chemical Biology</td>
<td>Associate Professor of Medicine</td>
</tr>
<tr>
<td>Mount Sinai School of Medicine</td>
<td>Chief, Renal Electrolyte and Hypertension Division (PMC)</td>
</tr>
<tr>
<td>Ph.D., The Rockefeller University</td>
<td>Penn Medicine, University of Pennsylvania</td>
</tr>
<tr>
<td>Web: mountsinai.org/</td>
<td>Presbyterian Medical Center, Philadelphia</td>
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<td></td>
<td>Nephrology and Internal Medicine</td>
</tr>
<tr>
<td></td>
<td>Certified by the American Board of Internal Medicine</td>
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<td></td>
<td>Web: uphs.upenn.edu/</td>
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<table>
<thead>
<tr>
<th><strong>Dr. Feng Feng</strong></th>
<th><strong>Dr. Seung-Yup Ku</strong></th>
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<tbody>
<tr>
<td>Boston University</td>
<td>M.D., Ph.D., Seoul National University Medical College, Seoul, Korea Department of Obstetrics and Gynecology</td>
</tr>
<tr>
<td>Microbiology</td>
<td>Seoul National University Hospital, Seoul, Korea</td>
</tr>
<tr>
<td>72 East Concord Street R702</td>
<td></td>
</tr>
<tr>
<td>Duke University</td>
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<tr>
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<th><strong>Dr. Hrushikesh Aphale</strong></th>
<th><strong>Santhosh Kumar</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MDS- Orthodontics and Dentofacial Orthopedics. Fellow- World Federation of Orthodontist, USA.</td>
<td>Reader, Department of Periodontology, Manipal University, Manipal</td>
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<tr>
<th><strong>Gaurav Singhal</strong></th>
<th><strong>Dr. Aarti Garg</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Tropical Veterinary Sciences, currently pursuing Ph.D in Medicine</td>
<td>Bachelor of Dental Surgery (B.D.S.) M.D.S. in Pedodontics and Preventive Dentistry Pursuing Phd in Dentistry</td>
</tr>
<tr>
<td>Name</td>
<td>Background/Qualifications</td>
</tr>
<tr>
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</tr>
<tr>
<td>Sabreena Safuan</td>
<td>Ph.D (Pathology) MSc (Molecular Pathology and Toxicology) BSc (Biomedicine)</td>
</tr>
<tr>
<td>Arundhati Biswas</td>
<td>MBBS, MS (General Surgery), FCPS, MCh, DNB (Neurosurgery)</td>
</tr>
<tr>
<td>Getahun Asebe</td>
<td>Veterinary medicine, Infectious diseases, Veterinary Public health, Animal Science</td>
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<tr>
<td>Rui Pedro Pereira de Almeida</td>
<td>Ph.D Student in Health Sciences program, MSc in Quality Management in Healthcare Facilities</td>
</tr>
<tr>
<td>Dr. Suraj Agarwal</td>
<td>Bachelor of dental Surgery Master of dental Surgery in Oromaxillofacial Radiology. Diploma in Forensic Science &amp; Odonotology</td>
</tr>
<tr>
<td>Dr. Sunanda Sharma</td>
<td>B.V.Sc.&amp; AH, M.V.Sc (Animal Reproduction, Obstetrics &amp; gynaecology), Ph.D.(Animal Reproduction, Obstetrics &amp; gynaecology)</td>
</tr>
<tr>
<td>Osam Alali</td>
<td>PhD in Orthodontics, Department of Orthodontics, School of Dentistry, University of Damascus, Damascus, Syria. 2013 Masters Degree in Orthodontics.</td>
</tr>
<tr>
<td>Shahanawaz SD</td>
<td>Master of Physiotherapy in Neurology PhD- Pursuing in Neuro Physiotherapy Master of Physiotherapy in Hospital Management</td>
</tr>
<tr>
<td>Prabudh Goel</td>
<td>MCh (Pediatric Surgery, Gold Medalist), FISPU, FICS-IS</td>
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<td>PhD in Pharmaceutical Chemistry</td>
</tr>
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<td>MD, Specialty Assistant Professor in Internal Medicine</td>
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<td>Vaishnavi V.K Vedam</td>
<td>Master of dental surgery oral pathology</td>
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<td>Surekha Damineni</td>
<td>Ph.D with Post Doctoral in Cancer Genetics</td>
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<tr>
<td>Tariq Aziz</td>
<td>PhD Biotechnology in Progress</td>
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Results of a Questionnaire on Teeth for 118 People Who Participated in the University Festival

By Naomi Katayama & Shyoko Kondo
Nagoya Women’s University

Abstract- A dental questionnaire survey conducted on 34 high school students, 55 university students, 23 Middle-age who participated in the university festival. Participants answered yes or no to ten self-administered questions. Also, participants described the hardness of meals, brushing teeth after meals, and time to spend eating in a questionnaire. As a result, some students even had some gum inflammation. Middle-Ages had many people who had experience with swollen gums (52.2%). Of the participants, the Middle Ages were few who applied fluorine (17.4%), and many were students (high school students 64.7%, university students 90.9%). Most people brush their teeth after breakfast or dinner. Participants replied that they usually eat a little hard (52.0%) or soft (38.1%) food. One high school student replied that he usually eats soft food. The time to eat was longer than breakfast and then dinner, but it was less than 30 minutes ever for dinner. Middle-Ages ad an average time to spend eating of fewer than 10 minutes for breakfast, 14 minutes for lunch, and 22 minutes for dinner. Middle ages had shorter meal times in all than students. Form the results of the participants; we wondered if they did not chew food very well because they eat soft food in a short time.

Keywords: tooth, questionnaire survey, university festival.

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Naomi Katayama & Shyoko Kondo

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Keywords: tooth, questionnaire survey, university festival.

I. Introduction

Unlike primitive people, modern people have smaller jaws and weaker biting power. Maintaining a healthy oral condition helps maintain and improve health. In Japan, there is an 8020 campaign (keeping 20 teeth until age 80). Tooth brushing learned during kindergarten and elementary school, and it needs to teach at home. However, it is often impossible to brush each after meals. It has reported overseas that tooth education has a good effect on tooth brushing \(^1\). Similarly, for other dental care, there is a good point that knowledge and education about teeth motivate \(^3,4\). It is good to provide oral care because keeping healthy teeth affects our eating habits. Therefore, this study reports the results of a questionnaire survey on teeth for participants who visited the university festival.

II. Materials and Methods

a) Participants

Participants were 34 high school students, 55 university students, and 23 middle-age people. Participants voluntarily participated in the survey.

b) Questionnaire survey method

The questionnaire items for teeth shown in Table 2. First of all, the participants answered ten items shown in Table 2 in a self-administered from with a yes or no answer. After that, participants described in the questionnaire about the hardness of meals they usually eat and the average time (minutes) to eat.

Finally, at the time of participation, multiple answers were given when brushing teeth (after breakfast, after lunch, after dinner, after snack).

Table 2: Questionnaire result about tooth (Yes or No)

<table>
<thead>
<tr>
<th>Partial dentures</th>
<th>full dentures</th>
<th>currently going to the dentist</th>
<th>undergoing regular dental check-ups</th>
<th>some currently undergoing treatment</th>
<th>having toothpaste</th>
<th>swollen gums</th>
<th>interested in tooth</th>
<th>fluoride application in elementary school</th>
</tr>
</thead>
</table>

| Partial dentures | full dentures
|------------------|---------------|
| currently going to the dentist | undergoing regular dental check-ups
| some currently undergoing treatment | having toothpaste
| swollen gums | interested in tooth
| fluoride application in elementary school |

| c) Ethical review board |

This study conducted with the approval of the Ethical Review Board (Nagoya women’s university ‘hitowo mochiita kennkyuunkansuru iinnkai’). The approval number is 30-7 and 30-17.

III. Results

a) Participants

Participants were 34 high school students, 55 university students, and 23 middle-age people. Participants voluntarily participated in the survey. Table 1 shows the average and standard deviation (SD) of the age of participants, the average and SD of height, and the average and SD of weight.
Table 1: Average and standard deviation (SD) of participants’ age, height and weight

<table>
<thead>
<tr>
<th></th>
<th>Age Average±SD</th>
<th>Height Average±SD</th>
<th>Weight Average±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school students (n=34)</td>
<td>17.03±0.67</td>
<td>157.17±5.12</td>
<td>48.27±6.60</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>20.46±0.54</td>
<td>157.76±6.20</td>
<td>50.35±4.48</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>47.14±2.61</td>
<td>159.71±8.43</td>
<td>54.94±10.10</td>
</tr>
</tbody>
</table>

b) Questionnaire results
Among the participants, 34 high school students answered ten questions about teeth, as shown in Table 3. High school students answered that they had no partial or full dentures. However, there were high school students who answered that the gums had swollen (35.3%).

Table 3: Questionnaire result about tooth for high school students (n=34)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial dentures</td>
<td>0</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>full dentures</td>
<td>0</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>dentures</td>
<td>1</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>currently going to the dentist</td>
<td>13</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>undergoing regular dental check-ups</td>
<td>3</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>some currently undergoing treatment</td>
<td>3</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>habing toothpaste</td>
<td>13</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>swollen gums</td>
<td>12</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>interested in toooth</td>
<td>13</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>fluorine application in elementary school (n=34)</td>
<td>22</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4 shows the results of questions about dental that university students made. Similar to high school students, university students do not have partial or full dentures, but someone had swollen gums (25.5%). Also, more university students applied fluoride to their teeth (90.9%) than high school students (64.7%).

Table 4: Questionnaire result about tooth for female university students (n=55)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial dentures</td>
<td>0</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>full dentures</td>
<td>0</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>dentures</td>
<td>1</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>currently going to the dentist</td>
<td>6</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>undergoing regular dental check-ups</td>
<td>19</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>some currently undergoing treatment</td>
<td>3</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>habing toothpaste</td>
<td>11</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>swollen gums</td>
<td>14</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>interested in toooth</td>
<td>23</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>fluorine application in elementary school (n=55)</td>
<td>50</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5 shows the results of the questionnaire regarding middle-age teeth. The middle-age also had no a trial or full dentures. Middle Age often had swollen gums (52.2%), and few of them applied fluoride (17.4%).
We asked the participants about the hardness of the food they usually eat (see Table 6 and 7). As a result, most participants answered that the foods they usually eat were a little hard or a little soft. However, a high school student answered the question that she eat soft food.

### Table 6: Hardness of the usually-eat-meal (n=112)

<table>
<thead>
<tr>
<th></th>
<th>Hard</th>
<th>Slightly hard</th>
<th>Slightly soft</th>
<th>Soft</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school students (n=34)</td>
<td>1</td>
<td>17</td>
<td>13</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>3</td>
<td>33</td>
<td>18</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 7: Hardness of the usually-eat-meal (%) (n=112)

<table>
<thead>
<tr>
<th></th>
<th>Hard</th>
<th>Slightly hard</th>
<th>Slightly soft</th>
<th>Soft</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school students (n=34)</td>
<td>2.9</td>
<td>50</td>
<td>38.2</td>
<td>2.9</td>
<td>5.9</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>5.5</td>
<td>60.0</td>
<td>32.7</td>
<td>0.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>8.7</td>
<td>43.5</td>
<td>43.5</td>
<td>0</td>
<td>4.3</td>
</tr>
</tbody>
</table>

We asked the participants about the time to eat (see Table 8). As a result, they were spending more lunch than breakfast and more dinner than lunch. But the middle-ages took less time in all than the students.

### Table 8: Comparison of average time ± standard deviation for one meal (minute)

<table>
<thead>
<tr>
<th></th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
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</thead>
<tbody>
<tr>
<td>High school students (n=34)</td>
<td>14.1±6.3</td>
<td>22.9±8.4</td>
<td>29.1±12.6</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>14.6±9.4</td>
<td>21.9±9.2</td>
<td>28.4±14.8</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>9.8±3.3</td>
<td>13.6±5.6</td>
<td>21.6±12.7</td>
</tr>
</tbody>
</table>

The participants asked whether they would brush their teeth after eating with multiple answers (see Table 9). As a result, most participants answered that they would brush their teeth after breakfast and dinner. They would not polish after lunch.

### Table 9: Brush the teeth every time or not (numbers)

<table>
<thead>
<tr>
<th></th>
<th>Morning</th>
<th>Daytime</th>
<th>Night</th>
<th>Do not</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school students (n=34)</td>
<td>24</td>
<td>1</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>44</td>
<td>1</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>12</td>
<td>3</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>
IV. Discussion

As a result of questions about teeth to people who attended this university festival, no one had full or partial dentures until the middle-ages. Most participants answered that they would brush their teeth after breakfast and dinner. They would not polish after lunch. It reported that many students abroad brush their teeth twice or more a day \(^5\). In particular, females brushed their teeth better than males and used dental floss \(^5,6\). The participants in the middle-ages were applying fluoride than students, and many had swollen gums. Also, the time to spend eating for breakfast and lunch were short and tended to eat soft foods. Middle-ages are the age that requires the prevention of alveolar pyorrhea, and maintaining 20 teeth by the age of 80 is likely to be difficult if the teeth are not valued. It has reported that the results of middle-age teeth surveys overseas also indicate that gingivitis and inflammation around the teeth are common \(^7\). And education should be provided from the perspective of public health \(^7\). Many participants, ever student, have experience with swollen gums. It reported that a few Japanese people control plaque \(^8\). It also reported that there are many Koreans who are the same Asian people who bleed from their gums when brushing their teeth compared to Americans \(^9\). Since the staple food of Asians is rice, it may be one of the causes of gingivitis that it is tender and sticky and easily attaches to teeth. Also, in this study, since a high school student answered that she usually eats soft foods, we thought it would be good to investigate how much chewing power they had. The Japanese staple food is rice, which is soft, so we would like to find out if it has enough chewing power.

V. Conclusions

A questionnaire survey on teeth was conducted for thig school students, university students, Middle Ages who participated in the university festival. As a result, many young students had swollen gums, and few the middle-ages were applying fluoride. Participants replied that they would eat either hard or soft food in their usual diet. Participants spent less time (20-30 minutes) on meals of all ages, with Middle Age having breakfast within 10 minutes, lunch within 15 minutes, and dinner around 20 minutes. There are many soft foods in the Japanese diet, and we would like to find out by grasping whether or not they have sufficient chewing power.

Acknowledgements

This study was supported by the Japanese Society of Taste Technology, 2019.

References Références Referencias

Fundamental Study of Quantitative Evaluation of Radio Wave Output of Wireless Medical Telemetry Transmitters Operable in Medical Field

By Kiyotaka Fujii, Kazumasa Kishimoto & Munenori Inoue

Abstract- Wireless medical telemetry systems (WMTSs) are important medical equipment for monitoring of biological information such as the electrocardiogram of a patient in a remote location in real time. However, because WMTSs have characteristically used channels that are unique to the radio wave spectrum, many institutions have not previously managed WMTSs. Therefore, we examined a method for quantitative evaluation of the radio wave output of a wireless medical telemetry transmitter (WMTT) that can even be implemented in the medical field. In the experiments, we demonstrated the possibility of use of the method for quantitative evaluation of WMTT radio wave output in the medical field using two types of radio wave propagation model: a free-space propagation model and a two-ray ground reflection model. To determine the reference threshold value for use of each model, a breakpoint was found to be important to grasp the change point between short distance and long distance. It was indicated that the measured value was lower than the theoretical value below the breakpoint, while the measured value was slightly higher than the theoretical value beyond the breakpoint.

Keywords: wireless medical telemetry transmitter, distance characteristics, free-space propagation model, two-ray ground reflection model.

GJMR-K Classification: NLMC Code: QS 26
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Keywords: wireless medical telemetry transmitter, distance characteristics, free-space propagation model, two-ray ground reflection model.

I. Introduction

The Ministry of Health, Labor and Welfare established medical equipment safety managers for all medical institutions in an April 2007 revision of medical law, along with training for the safe use of medical equipment, training for all medical equipment maintenance planning and implementation, and information gathering for safe use of the equipment [1]. Wireless medical telemetry systems (WMTSs) are important medical equipment that can monitor biological information such as the electrocardiogram of a patient in a remote location in real time. However, because WMTSs have characteristically used channels unique to the radio wave spectrum, many institutions have not previously managed WMTSs.

A report produced by the Electromagnetic Compatibility Conference Japan stated that although the introduction of WMTSs was particularly advanced in middle-and large-scale hospitals with more than 100 beds, the overall implementation of the required radio channel management was only 48.1% and, even in the case of larger hospitals with 200 beds or more, only reached as high as 56.0% [2].

Examples of the main problems related to WMTS include radio waves not reaching their intended destinations, cross talk and electromagnetic noise, electromagnetic interference from other devices, and radio channel interference between proximal hospitals. These problems can be serious in some cases. A WMTS is generally configured as a complex system that includes a sensor, a wireless medical telemetry transmitter (WMTT), an antenna system, a patient monitor and other items of equipment. Therefore, in addition to the difficulties involved in maintenance management in the medical field, it has not been easy to investigate the cause when trouble occurs within these systems.

In previous research, although the electromagnetic interference between the WMTS and equipment such as a light-emitting diode (LED) has been demonstrated, the results presented did not represent a performance evaluation of the WMTT itself [3, 4, 5]. In addition, another report measured the reception limit distance to determine whether a signal can be received [6]. When using this reporting method, a space of approximately 100 m in the line of sight is required and such a space requirement is difficult to execute in the medical field. Additionally, the threshold of the transmission limit distance remains unclear and there is a high possibility that this threshold is influenced by artifacts such as obstacles.

Therefore, in this study, we aimed to clarify two points. The first point involved calculating the distance characteristics of the radio wave output from the WMTT using a simple radio wave propagation model and thus enabling derivation of the threshold value at each distance value. The second point involved was to evaluate the appropriateness of the threshold values derived as part of the first point by actually measuring the radio wave output of a WMTT used in the medical field. Based on the above, we then examined a method for quantitative evaluation of the radio wave output of a WMTT that can be implemented even in the medical field.
II. Method

According to a standard produced by the Association of Radio Industries and Businesses, the value measured when a power meter is connected to an aerial terminal is defined as the aerial power ($P_a$; units: W), and in the case of the class A transmitter, which is mainly used in the medical field, $P_a$ is specified to be 1 mW or less [7].

Because it is difficult to measure the aerial power of the WMTT in the medical field, the voltage at the receiver input ($V$; units: dBµV) at the spectrum analyzer was taken to be the radio wave output. In addition, because radio waves are attenuated over distance, the voltage received at the receiver input also varies with distance.

Therefore, to study the measurement conditions and the threshold value, the theoretical value was first calculated using the radio wave propagation model and the result was then compared with the actual measured value from radio wave output measurements in the medical field.

a) Distance characteristics of radio wave output when using the radio wave propagation model

When the unit conversion formulas (1) and (2) were used for conversion from power into voltage, 1 mW was converted into approximately 107 dBµV for a system with 50 Ω impedance (R unit: Ω).

$$
\text{dBµV} = 20 \log_{10} \left( \frac{V}{1 \mu V} \right) \quad (1)
$$

$$
\text{dBµV} = 20 \log_{10} (\sqrt{RP} \times 10^6) \quad (2)
$$

For the radio wave propagation model, both the free-space propagation model and the two-ray ground reflection model were used. By subtracting the propagation loss derived from each model from the 107 dBµV value calculated above, the distance characteristics of the radio wave output were acquired. The propagation distances were set at 0.1 m, 0.3 m, 0.5 m, 1.0 m, and 3.0 m, and over the range from 5.0 m to 50 m in steps of 5.0 m.

i. Free-space propagation model

The transmission power ($P_t$) and the reception power ($P_r$) are calculated from the transmission formula of the Friis Transmission Equation using the antenna gains ($G_r$, $G_t$), the propagation distance ($d$), and the wavelength ($\lambda$) [8]. The free space radio propagation loss ($L_f$) was calculated from equation (4). Assuming that isotropic antennas were used for both the transmitting and receiving antennas, the basic free-space model propagation loss ($L_{f1}$; units: dB) was calculated using equation (5).

$$
L_f = \left( \frac{4\pi d}{\lambda} \right)^2 \quad (4)
$$

$$
L_{f1} = 10 \log_{10} \left( \frac{4\pi d}{\lambda} \right)^2 \quad (5)
$$

ii. Two-ray ground reflection model

In line-of-sight propagation, the two-ray ground reflection model can be expressed using equations (6) and (7) using the transmission power and the reception power (i.e., $P_t$ and $P_r$, respectively). $\Delta\phi$ is the phase difference due to the distance difference between the two radio waves, and $h_t$ and $h_r$ are the transmitting and receiving antenna heights, respectively [9]. The break point ($d_{b1}$) at which the distance attenuation tendency changes is defined by equation (8). The distance attenuation was calculated using equation (9) for short distances and equation (10) for long distances with the break point acting as the boundary. For short distances from the break point, the direct wave and the reflected wave are both fading, but in this case, the average value was used.

Assuming that isotropic antennas were used for both the transmitting and receiving antennas, the basic radio wave propagation losses ($L_{t1}$, $L_{t2}$; units: dB) of the two-ray ground reflection model were then calculated.

$$
\frac{P_r}{P_t} = \left\{ \frac{\lambda}{2\pi d} \sin \left( \frac{\Delta\phi}{2} \right) \right\}^2 G_r G_t \quad (6)
$$

$$
\Delta\phi \approx \frac{4\pi h_t h_r}{\lambda d} \quad (7)
$$

$$
d_b = \frac{4h_t h_r}{\lambda} \quad (8)
$$

$$
L_{t1} = 10 \log_{10} 2 \left( \frac{2\pi d}{\lambda} \right)^2 \quad (9)
$$

$$
L_{t2} = 10 \log_{10} \left( \frac{d^2}{h_t h_r} \right)^2 \quad (10)
$$

For both models, the WMTT transmission frequency was calculated to be 448.8000 MHz.

b) Radio wave output measurement experiment in the medical field

To simulate line-of-sight propagation in the medical field, a measurement experiment was conducted in a corridor on the 3rd floor of our hospital. External waves that could interfere with the operating frequency range (420 MHz to 450 MHz) of the WMTT from the exterior have not been confirmed. We measured the radio wave output of the WMTT (ZS-630P, Nihon Kohden, Co., Ltd.) using a spectrum analyzer (HAS9101B, Willtek). The specifications of this WMTT

...
are listed in Table 1. The transmission frequency of the WMTT was 448.800 MHz.

The spectrum analyzer and the WMTT were installed at a height above the floor of 1 m (Fig.1), and the distance characteristic of the WMTT was set to be equal to the distance characteristic of the radio wave output obtained using the radio wave propagation model (Fig.2: Point A to point B). Measurements were performed with Max Hold after sweeping for 30 s and were acquired three times for each propagation distance. The measurement data were first converted into an antilogarithm and then the data from the three measurement sets were averaged and expressed in dBµV.

Table 1: Specifications of the wireless medical telemetry transmitter

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation mode</td>
<td>Type-A (digital)</td>
</tr>
<tr>
<td>Modulation method</td>
<td>Frequency shift keying (FSK)</td>
</tr>
<tr>
<td>Type of radio wave</td>
<td>F7D</td>
</tr>
<tr>
<td>Center frequencies</td>
<td>420 to 440 MHz (Channel changeable type)</td>
</tr>
<tr>
<td>Occupied bandwidth</td>
<td>8.5 kHz</td>
</tr>
<tr>
<td>Transmitting antenna</td>
<td>Electrode lead, Built in, Probe for oxygen saturation rate in blood</td>
</tr>
<tr>
<td>Output power</td>
<td>1 mW</td>
</tr>
</tbody>
</table>

Fig.1: Schematic of radio wave output measurement experiment.

Fig. 2: Radio wave output measurement experiment in the medical field.

III. Results

a) Distance characteristics of radio wave output using the radio wave propagation model

We show the distance characteristics of the radio wave output that were determined using the radio wave propagation model in Fig.3, and the corresponding values are presented in Table 2. Because the break point is approximately 6.0 m, the formula for \( L_{t1} \) was used for the distances up to 5.0 m and the formula for \( L_{t2} \) was used for the distances of 10 m and over. When \( L_B \) and \( L_{t1} \) were compared, their tendencies were the same, with the intercept component of \( L_B \) being only approximately 3 dB larger than that of \( L_{t1} \) (equations (5) and (9), respectively). In contrast, when \( L_B \) and \( L_{t2} \) were compared, \( L_{t2} \) increased abruptly with \( d^2 \) with respect to the increase with \( d^2 \) for \( L_B \) (equations (5) and (10), respectively). Therefore, the radio wave output was reversed after the break point.
b) Radio wave output measurement experiment in the medical field

We show the relationship between the distance characteristics of the actual value of the radio wave output in the medical field and the radio wave output determined using the radio wave propagation model here (Fig.4). The corresponding numerical values are presented in Table 2. In both the free-space propagation model and the two-ray ground reflection model, reversal of the measured value in the medical field occurred after the breakpoint.

Table 2: Radio wave outputs obtained using the radio wave propagation model and measured values in the medical field

<table>
<thead>
<tr>
<th>Distance [m]</th>
<th>Free-space propagation model [dB μV]</th>
<th>Two-ray ground reflection model [dB μV]</th>
<th>Measured value in medical field [dB μV]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
</tr>
<tr>
<td>0.1</td>
<td>101.5</td>
<td>104.5</td>
<td>90.2</td>
</tr>
<tr>
<td>0.3</td>
<td>92.0</td>
<td>95.0</td>
<td>81.6</td>
</tr>
<tr>
<td>0.5</td>
<td>87.5</td>
<td>90.6</td>
<td>74.4</td>
</tr>
<tr>
<td>1.0</td>
<td>81.5</td>
<td>84.5</td>
<td>72.8</td>
</tr>
<tr>
<td>3.0</td>
<td>72.0</td>
<td>75.0</td>
<td>65.7</td>
</tr>
<tr>
<td>5.0</td>
<td>67.5</td>
<td>70.6</td>
<td>67.5</td>
</tr>
<tr>
<td>10.0</td>
<td>61.5</td>
<td>67.0</td>
<td>64.5</td>
</tr>
<tr>
<td>15.0</td>
<td>58.0</td>
<td>60.0</td>
<td>66.6</td>
</tr>
<tr>
<td>20.0</td>
<td>55.5</td>
<td>55.0</td>
<td>62.3</td>
</tr>
<tr>
<td>25.0</td>
<td>53.6</td>
<td>51.1</td>
<td>62.2</td>
</tr>
<tr>
<td>30.0</td>
<td>52.0</td>
<td>47.9</td>
<td>57.3</td>
</tr>
<tr>
<td>35.0</td>
<td>50.6</td>
<td>45.2</td>
<td>54.0</td>
</tr>
<tr>
<td>40.0</td>
<td>49.5</td>
<td>42.9</td>
<td>54.4</td>
</tr>
<tr>
<td>45.0</td>
<td>48.5</td>
<td>40.9</td>
<td>49.2</td>
</tr>
<tr>
<td>50.0</td>
<td>47.5</td>
<td>39.0</td>
<td>50.7</td>
</tr>
</tbody>
</table>
IV. Discussion

a) Comparison of radio wave outputs when using radio wave propagation model and measured values in the medical field

With regard to the relationship between the measured values in the medical field and those obtained from the radio wave propagation model, it was proposed from the results of the regression analysis that both models can be used for threshold estimation of the distance characteristic. In contrast, we focus on comparison of the distance characteristics of the measured values in the medical field with those obtained from the radio wave propagation model. In both the free-space propagation model and the two-ray ground reflection model, a reversal of the measured value occurred in the medical field near the break point. From the above, it is considered that this represents the tendency changing between the short distance and long distance conditions. When compared with the radio wave propagation model values, the measured values in the medical field tended to be low at short distances and high at long distances. The break point is the point where the influence of the Earth begins to appear in the first Fresnel zone. It is considered to be important as a guide to the points that represent the change between short distance and long distance conditions.

b) Quantitative evaluation method of radio wave output of WMTT in the medical field

Based on the above, we make the following assumptions during measurement of the radio wave output of the WMTT in the medical field. Two specific situations were considered: measurement in the medical equipment management room and measurement in the ward. Because it is important to understand the break point in both situations, the break point was calculated in advance.

First, when taking the measurements in the medical equipment management room, it was assumed that the propagation distance would be smaller than the break point. This is because the medical equipment management room is often small. Therefore, given that the measured value was slightly lower than the calculated value obtained from the radio wave output using the radio wave propagation model, the threshold value was set based on the propagation distance.
Second, when taking the measurements in a ward, it was assumed that the propagation distance will be greater than the break point. This is because the measurements are taken in a larger space. Therefore, given that the measured value was slightly higher than the calculated value obtained from the radio wave output using the radio wave propagation model, the threshold value was set based on the propagation distance.

c) Limitations of this study

This study has some limitations. First, there is a problem with the experimental environment. This experiment was performed with an antenna height of 1 m, a corridor width of 2.8 m (distance in the horizontal direction to the measurement point: 1.4 m) and a ceiling height of 2.6 m (distance in the vertical direction from the measurement point: 1.6 m) only. In contrast, in the actual measurement environment, the distances to the wall surfaces, the floor surface and the ceiling are varied. It is undeniable that the measured value may show different tendencies if the environment is different.

Second, there is the problem of the antenna gain. In this work, the antennas were assumed to be isotropic antennas and the theoretical values were calculated on this basis. Although the isotropic antenna is a virtual antenna, it is very difficult to grasp the antenna gain accurately in the medical field. Therefore, we adopted a method that any researcher can calculate easily.

Finally, there is a problem with the WMTT model used. In the experiments, only one model of WMTT produced by one manufacturer was tested. The actual measurement values would undoubtedly differ when obtained using equipment from other manufacturers and different models.

V. Conclusion

In this work, while assuming line-of-sight propagation, we have demonstrated the possibility of quantifying radio wave output in the medical field using two types of radio wave propagation model: a free-space propagation model and a two-ray ground reflection model. To determine a reference threshold value when using each model, determination of a break point is important to grasp the change point between the short distance and long distance conditions.

It was found that the measured value was lower than the theoretical value below the break point, but the measured value was then slightly higher than the theoretical value beyond the break point.

Acknowledgment

We thank David MacDonald, MSc, from Edanz Group (https://en-author-services.edanzgroup.com/ac) for editing a draft of this manuscript.

References Références Referencias

Chewing Questionnaire Survey Results and Chewing Ability Test Results of 118 People Who Participated in the University Festival

By Naomi Katayama & Shoko Kondo
Nagoya Women’s University

Abstract- Chewing well and eat slowly are good habits for maintaining good health. A slow rise in blood sugar after eating can keep people away from overeating, obesity, and diabetes. In this study, we conducted a subjective self-administered questionnaire survey on chewing and a chewing ability test using chewing ability chewing gum for 34 high school students, 55 university students, and 23 middle-aged people who participated in the university festival. The chewing ability test, a chewing gum manufactured by LOTTE used. As a result, most of the participants knew xylitol and some word, the 8020 campaign (holding 20 teeth at the age of 80). Also, although many participants could bite apples with skin, a few were confident in their teeth. Many participants replied they were chewing their meals well, but a few participants bite 30 times one bite of food. Participants chewed the chew-ability gum 60 times, and the inspector judged the gum color.

Keywords: chewing power, chewing ability gum, questionnaire survey, university festival.

GJMR-K Classification: NLMC Code: WA 900

Strictly as per the compliance and regulations of:

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Abstract—Chewing well and eat slowly are good habits for maintaining good health. A slow rise in blood sugar after eating can keep people away from overeating, obesity, and diabetes. In this study, we conducted a subjective self-administered questionnaire survey on chewing and a chewing ability test using chewing ability chewing gum for 34 high school students, 55 university students, and 23 middle-aged people who participated in the university festival. The chewing ability test, a chewing gum manufactured by LOTTE used. As a result, most of the participants knew xylitol and some word, the 8020 campaign (holding 20 teeth at the age of 80). Also, although many participants could bite apples with skin, a few were confident in their teeth. Many participants replied they were chewing their meals well, but a few participants bite 30 times one bite of food. Participants chewed the chew-ability gum 60 times, and the inspector judged the gum color. As a result of chewing gum, the number of participants with sufficient chewing ability (gum color is red) was 2.9% for high school students, 18.2% of university students, and 13.0 % of Middle-age peoples. Many participants had a chewing ability of 4 (gum color is pink) or 3 (gum color is beige).Those with the weak chewing ability (gum color is yellowish-green) were 8.8 % for high school students, 1.8 % for university students, and 8.7 % for Middle-age peoples. Many participants found that their chewing ability was rather weak. To live long and healthy, the firm chewing ability required. In the future, it may be well to perform training to chew gum to develop chewing ability.

Keywords: chewing power, chewing ability gum, questionnaire survey, university festival.

I. Introduction

Biting stimulates the brain, and the satiety center can stimulated to control food intake. In Japan, the 8020 campaign has widely publicized by the government. By the time you are 80 years old, you should have 20 teeth and chew your teeth to eat enough to maintain your nutrition and maintain your health. However, Japanese food is mainly rice, and soft food is the staple food. Opportunities to bit and eat hard food have been reducing from 50 years. As for meals, the chances of eating as a family together over time have decreased, and the number of people who eat alone in a short time for work and study is increasing. If we eat without chewing in a short time, we will eat more food than we need before the stimulation to the satiety center. And our blood sugar level will rise sharply, and excess sugar will accumulate in our body as fat, resulting in obesity. The probability of getting diabetes increases. Therefore, the purpose of this study was to grasp the actual situation by grasping the subjective of the mastication of people of various ages and examining the chewing ability of the people.

II. Materials and Methods

a) Participants
Chewing questionnaire Survey and Chewing Ability Test conducted on 34 high school students, 55 university students, 23 Middle-age who participated in the university festival. Participants voluntarily participated in the chewing questionnaire and chewing ability test.

b) Chewing questionnaire survey
Participants completed a self-administered questionnaire about nine items related to chewing. Table 1 shows the contents of each item.

Table 1: Questionnaire result about mastication

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you chew gum everyday?</td>
<td></td>
</tr>
<tr>
<td>Do you know the word Xylitol?</td>
<td></td>
</tr>
<tr>
<td>Do you know the word Mutants?</td>
<td></td>
</tr>
<tr>
<td>Can you bite an apple with skin?</td>
<td></td>
</tr>
<tr>
<td>Are you confident in your teeth?</td>
<td></td>
</tr>
<tr>
<td>Are your teeth strong?</td>
<td></td>
</tr>
<tr>
<td>Do you know the 8020 campaign?</td>
<td></td>
</tr>
<tr>
<td>Can you chew the food?</td>
<td></td>
</tr>
<tr>
<td>Can you chew a bite of food 30 times?</td>
<td></td>
</tr>
</tbody>
</table>

c) Chewing Ability Test
The chewing ability test, a chewing gum manufactured by LOTTE used. The gum made for

Author α: Graduate School of Nagoya Women’s University, Nagoya City, Japan.
Corresponding Author α: Nagoya Women’s University, Nagoya City, Japan. e-mail: naomik@nagoya-wu.ac.jp
Author σ: Watanabe Hospital, Noma, Achi, Japan.
chewing 60 times (about one minute) and judge the chewing ability by looking at the color of the gum. The mechanism that changes the color of this gum is that by chewing it, a new neutral/alkaline oral environment can created by mixing the citric acid and uncolored pigment mixed in the gum with the saliva. The uncolored pigments in the gum are usually colorless under acid. The salivary pH is neutral. By chewing the gum in the oral cavity, neutral saliva and citric acid in the chewing gum mix well, making it neutral and alkaline. This oral reaction changes the gum color from green to red. This phenomenon determines chewing ability. The gum is green (chewing ability 1) at first, then yellowish-green (chewing ability 2), beige (chewing ability 3), pink (chewing ability 4), and finally red (chewing ability 5). If chewable, the gum will turn red after 60 chewing times.

d) Ethical review board
This study conducted with the approval of the Ethical Review Board (Nagoya women's university 'hito wo mochii ta kennkyuu ni kansuru iiin kai'). The approval number is 30-7 and 30-17.

III. Results

a) Participant results
Participants were 34 high school students, and the average age ± standard deviation was 17.03±0.67. Participants were 55 university students, and the average age ± standard deviation was 20.46±0.54. Participants were 23 Middle-age people, and the average age ± standard deviation was 47.14±2.61.

b) Questionnaire survey results
Table 2 shows the results of a questionnaire survey on mastication conducted for high school students of participants. There are few high school students can chew gum everyday and know the word xylitol. Everyone knew the name xylitol. High school students also could bite an apple with skin and thought they had firm teeth. Also, many high school students answered that they did not bite their bite 30 times when they ate the food.

Table 2: Questionnaire result about mastication for high school students (n=34) (%)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you chew gum everyday?</td>
<td>6 (18%)</td>
<td>26 (76%)</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Do you know the word Xylitol?</td>
<td>32 (94%)</td>
<td>0 (0%)</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Do you know the word Mutants?</td>
<td>9 (26%)</td>
<td>25 (74%)</td>
<td></td>
</tr>
<tr>
<td>Can you bite an apple with skin?</td>
<td>29 (85%)</td>
<td>5 (15%)</td>
<td></td>
</tr>
<tr>
<td>Are you confident in your teeth?</td>
<td>16 (47%)</td>
<td>18 (53%)</td>
<td></td>
</tr>
<tr>
<td>Are your teeth strong?</td>
<td>24 (71%)</td>
<td>10 (29%)</td>
<td></td>
</tr>
<tr>
<td>Do you know the 8020 campaign?</td>
<td>23 (68%)</td>
<td>11 (32%)</td>
<td></td>
</tr>
<tr>
<td>Can you chew the food?</td>
<td>20 (59%)</td>
<td>14 (41%)</td>
<td></td>
</tr>
<tr>
<td>Can you chew a bite of food 30 times?</td>
<td>6 (18%)</td>
<td>28 (82%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows the results of a questionnaire survey on mastication conducted for university students of participants. There are few university students can chew gum everyday. Most university students knew the name xylitol. About half of the university students knew the name mutants. The university students also could bite an apple with skin. The University students were not very confident in their teeth, and about half of them thought their teeth were firm. Also, many university students know the 8020 campaign, but they say that they do not often chew food. And many university students answered that they did not bit their bite 30 times when they ate the food.
Table 3: Questionnaire result about mastication for female university students (n=55) (%)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you chew gum everyday?</td>
<td>11 (20%)</td>
<td>44 (80%)</td>
</tr>
<tr>
<td>Do you know the word Xylitol?</td>
<td>52 (95%)</td>
<td>3 (5%)</td>
</tr>
<tr>
<td>Do you know the word Mutants?</td>
<td>30 (55%)</td>
<td>25 (45%)</td>
</tr>
<tr>
<td>Can you bite an apple with skin?</td>
<td>49 (89%)</td>
<td>6 (11%)</td>
</tr>
<tr>
<td>Are you confident in your teeth?</td>
<td>18 (33%)</td>
<td>37 (67%)</td>
</tr>
<tr>
<td>Are your teeth strong?</td>
<td>29 (53%)</td>
<td>26 (47%)</td>
</tr>
<tr>
<td>Do you know the 8020 campaign?</td>
<td>45 (82%)</td>
<td>10 (18%)</td>
</tr>
<tr>
<td>Can you chew the food?</td>
<td>22 (40%)</td>
<td>33 (60%)</td>
</tr>
<tr>
<td>Can you chew a bite of food 30 times?</td>
<td>8 (15%)</td>
<td>47 (85%)</td>
</tr>
</tbody>
</table>

Table 4 shows the results of a questionnaire survey on mastication conducted for the middle-age people of participants. There are few middle-age people can chew gum everyday. All of the middle-age people knew the name xylitol. About half of the middle-age people knew the name of mutants. Middle-age people also could bite an apple with skin. The middle-age people were not very confident in their teeth, and about half of them thought their teeth were firm. Also, many middle-age people know the 8020 campaign, but they say that they do not often chew food. And middle-age people answered that they did not bit their bite 30 times when they ate the food.

Table 4: Questionnaire result about mastication for middle age (n=23) (%)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you chew gum everyday?</td>
<td>6 (26%)</td>
<td>17 (74%)</td>
<td></td>
</tr>
<tr>
<td>Do you know the word Xylitol?</td>
<td>23 (100%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Do you know the word Mutants?</td>
<td>15 (65%)</td>
<td>8 (35%)</td>
<td></td>
</tr>
<tr>
<td>Can you bite an apple with skin?</td>
<td>20 (87%)</td>
<td>3 (13%)</td>
<td></td>
</tr>
<tr>
<td>Are you confident in your teeth?</td>
<td>8 (35%)</td>
<td>15 (65%)</td>
<td></td>
</tr>
<tr>
<td>Are your teeth strong?</td>
<td>8 (35%)</td>
<td>15 (65%)</td>
<td></td>
</tr>
<tr>
<td>Do you know the 8020 campaign?</td>
<td>15 (65%)</td>
<td>8 (35%)</td>
<td></td>
</tr>
<tr>
<td>Can you chew the food?</td>
<td>3 (13%)</td>
<td>20 (87%)</td>
<td></td>
</tr>
<tr>
<td>Can you chew a bite of food 30 times?</td>
<td>0 (0%)</td>
<td>22 (96%)</td>
<td>1 (4%)</td>
</tr>
</tbody>
</table>

c) Chewing Ability Test results

Participants chewed the chew-ability gum 60 times, and the inspector judged the gum color (see Table 5 and 6). As a result of chewing gum, the number of participants with sufficient chewing ability (gum color is red) was 2.9% for high school students, 18.2% of university students, and 13.0% of the middle-age peoples. Many participants had a chewing ability of 4 (gum color is pink) or 3 (gum color is beige). Those with the weak chewing ability (gum color is yellowish-green) were 8.8% for high school students, 1.8% for university students, and 8.7% for Middle-age peoples.

Table 5: Chewing ability test gum color after chewing 60 times (numbers)

<table>
<thead>
<tr>
<th>Gum Color</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school students (n=34)</td>
<td>0</td>
<td>3</td>
<td>20</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>0</td>
<td>1</td>
<td>15</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>0</td>
<td>2</td>
<td>10</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 6: Chewing ability test gum color after chewing 60 times (%)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Green</td>
<td>Yellowish green</td>
<td>Beige</td>
<td>Pink</td>
<td>Red</td>
</tr>
<tr>
<td>High school students (n=34)</td>
<td>0</td>
<td>8.8</td>
<td>58.8</td>
<td>29.4</td>
<td>2.9</td>
</tr>
<tr>
<td>Female college student (n=55)</td>
<td>0.0</td>
<td>1.8</td>
<td>27.3</td>
<td>52.7</td>
<td>18.2</td>
</tr>
<tr>
<td>Middle age (n=23)</td>
<td>0</td>
<td>8.7</td>
<td>43.5</td>
<td>34.8</td>
<td>13</td>
</tr>
</tbody>
</table>

IV. Discussion

Most of the people who attended the university festival this time did not have a habit of chewing gum. However, almost everyone knew the word xylitol. But about half of the participants knew the word mutants.

Participants were able to bite the apple with the skin on but were less confident in the teeth. The 8020 campaign, most participants, knew. Participants replied that they chew food well, but did not chew 30 times. Participants chewed the chew ability test gum. Results chewing ability was 2 (gum color is beige) or 3 (gum color is pink) in all age groups. Few participants were chewing well (gum color is red). It turned out that many people couldn’t bite enough. Past studies have shown that the time to spend eating are also working; for example, middle-age is6-10 minutes shorter than school students. Also, even for students who should have time, all the times to spend eating were within 30 minutes. People were not chewing enough food to eat. Overeating can prevented by eating the food bite little by little over time.

Furthermore, the blood glucose level after a mealcan moderated. Previous studies used device development and computational models to measure masticatory force. Also, there are many reports of studies that clarify the occlusal force. It has reported that the lack of teeth and the inability to shew sufficiently affect the brain. The relationship between chewing and cognitive and dementia risk has also been reported. I have reported that oral exercise with gum improves oral function in the elderly. Chewing gum from a young age and getting into the habit of chewing may help preserve oral function and reduce cognitive and dementia risk in the future. From the results of this study, since there are many young people and middle-aged people who do not chew sufficiently, we think that they are better to practice chewing by using chewing ability test gum. And we would like to increase the number of data and report the results in more detail.

V. Conclusions

For 118 people who participated in the university festival, a subjective self-report questionnaire about chewing and chewing ability tests using chewing ability gum conducted. The participants were 34 high school students, 55 university students, and 23 middle-aged peoples.

Acknowledgements

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References Références Referencias


Role of Neutraceuticlas and Lifestyle Modification in Madhumeha (Diabetes-Type 2) - A Review

By Prathibha. M, Basavaraj G Saraganachari, Prashanth Kumar & Arun B.J

Abstract- Ahara, Nidra and Brahmacharya are enumerated as the tripod of life and well being, imbalance in any one these may be the reason of disease. This is primordial explanation of Ayurveda regarding the health and disease. Concept of Ahara and Vihara are very basic and which are essential factors for the maintenance of life. From ancient to modern times, the perspective to visualize the lifestyle disorders particularly Madhumeha (diabetes) has shifted from holistic to drug oriented. Therefore, until a few years ago, the revival of the holistic approach, the Ayurvedic diet and lifestyle were not being much focused. Diabetes mellitus is a well known clinical syndrome since antiquity. Ayurveda mainly focuses on role of diet in Prameha and Madhumeha, which is akin to Diabetes. Nutraceuticals are food or food products that provide health and medical benefits, including the prevention and treatment of disease. Traditional Indian diets are functional and used as food and medicine. Along with the module of diet, some exercises and yogasanas proves to be the warrior for the diabetes.

Keywords: ahara, nutraceuticals, diabetes mellitus, madhumeha, prameha, brahmacharya.

GJMR-K Classification: NLMC Code: WB 55.A9
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Prathibha. M. °, Basavaraj G Saraganachari °, Prashanth Kumar ° & Arun B.J °

Abstract: Ahara, Nirda and Brahmacarya are enumerated as the tripod of life and well being, imbalance in any one these may be the reason of disease. This is primordial explanation of Ayurveda regarding the health and disease. Concept of Ahara and Vihara are very basic and which are essential factors for the maintenance of life. From ancient to modern times, the perspective to visualize the lifestyle disorders particularly Madhumeha (diabetes) has shifted from holistic to drug oriented. Therefore, until a few years ago, the revival of the holistic approach, the Ayurvedic diet and lifestyle were not being much focused. Diabetes mellitus is a well known clinical syndrome since antiquity. Ayurveda mainly focuses on role of diet in Prameha and Madhumeha, which is akin to Diabetics. Nutraceuticals are food or food products that provide health and medical benefits, including the prevention and treatment of disease. Traditional Indian diets are functional and used as food and medicine. Along with the module of diet, some exercises and yogasanas proves to be the warrior for the diabetes. Reviewing the current practices of diet and lifestyle including food habit, work, rest, exercises with important anti-diabetic properties of conventional system of medicine, accentuates the role of these in diabetes. The correlation and review further emphasizes the way to include or to evaluate more Nutraceuticals and lifestyle modifications for the diabetic population.

Keywords: ahara, nutraceuticals, diabetes mellitus, madhumeha, prameha, brahmacharya.

I. Introduction

Ayurveda science of life an ancient scientific authentic system of medicine which is guiding the mankind with various basic needs to be followed in healthy life. It is also guiding mankind with various principles to be stay healthy and stay away from physical, mental, and spiritual illness throughout life. For these tripod of well being Ayurveda emphasizes on Dinacharya(Daily regimen), Ratricharya (Conducts of night), Ritucharya (Seasonal conducts), which keep the person healthy. Concept of ahara and vihara are very basic and essential factors for the healthy life. These are emphasized in nutraceuticals and lifestyle management. It is also said that in both the conditions, of health and disease, the wholesomeness and the unwholesomeness is prime factor to be, as without proper diet, the use of any drug is futile. Diabetes mellitus is metabolic disorder characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both. Once regarded as single disease entity. Now seen as heterogeneous group of diseases, characterized by a state of chronic hyperglycemia resulting from a diversity of etiologies, environmental and genetic, acting jointly.

The underlying causes of diabetes the defective production or the action of insulin, a hormone that controls glucose, fat and amino acid metabolism. Characteristically diabetes is a long progression. Chronic hyperglycemia from whatever cause leads to a number of complications such as cardiovascular, renal, neurological, ocular, and other infections. India leads the world with maximum number of diabetic patients being termed as the “diabetes capital of the world”. According to Diabetes Atlas 2019 published by the International Diabetes Federation, the number of people with diabetes in India currently around 77.9 million (20-79years) expected to rise 1.2billion by 2025 unless urgent preventive steps are taken. The so called “Asian Indian Phenotype” refers to certain unique clinical and biochemical abnormalities in Indians which include increased insulin resistance, greater abdominal adiposity that is, higher waist circumference despite of lower body mass index(BMI), lower adiponectin and higher high sensitive C-reactive protein levels. This phenotype makes Asian Indians more prone to diabetes and premature coronary artery disease. At least a part of this is due to genetic factors.

As per WHO statistics in India diabetic Population is increasing rapidly. Research in India suggests that, though earlier Indians were least prone to diabetes, now they are more prone due to the rapid change in irregular dietary pattern, change in lifestyle, stress, less exercises, most of the urban population depend on packed food, processed food. Indians are getting diabetes on an average around 10years earlier an in migrated Indians these incidences are 4 times higher.

Treatment prevents some of its devastating complications, but does not usually restore normoglycemia or eliminate all the adverse consequences. The diagnosis is often delayed until complications present. Since current methods of
treating diabetes remain inadequate, prevention is preferable.6

With the similarity in signs and symptoms the Madhumeha can be taken as diabetes mellitus. In some contexts the word Prameha has also been used synonymously.

The concept of nutraceuticals (Nutraceuticals are products, which other than nutrition are also used as medicine. A nutraceutical product may be defined as a substance, which has physiological benefit or provides protection against chronic disease) and life-style modifications were explained and followed in ancient classics. It has been explained that from the food the live sustains, the food is dependent on ecosystem. The quotation explains sustenance of life is relayed on food. The elements of life like, quality of health, longevity, intellect and intelligence, happiness, nourishment, physical and mental well being all are dependent on the food what you consume.7 The impact of Pathyahara on health and disease is well explained. Based on dose, season, raw materials, habitat were the person come from and the food grown, combination, mode of preparation, processing, all has impact of the health both physical and mental. Madhumeha being a Yapya vyadhi (maintainable disease), these Pathyahara and Vihara (life style) also help in maintaining the normalcy and in preventing complications.

II. Material and Methods

a) Search strategy and inclusion criteria

Diet and lifestyle related etiologies accountable for diabetes as mentioned in Ayurvedic treatises were rationally review along with recommendations of Pathyahara (wholesome diet), Pathyavihara (whole life style) as prevent strategies. The search was conducted in light of contemporary scientific supporting data available in electronic and internet media for possible justification and validation of these Ayurvedic principles. Publications in Pubmed, Scopermed, from original articles, review works are collected. Searches were not limited by date or place of publications but to publications in English language.

III. Discussion

Madhumeha (diabetes mellitus), is the disease related with metabolism. Amongst the many dreadful conditions of metabolic disorders this stands first. Even though Madhumeha (diabetes mellitus) does not become fatal as and when it gets started, it will the precursor of many secondary complications.

a) Role of diet and lifestyle in diabetes - As precursor

The diet and lifestyle when it is improper it directly affects the metabolism. One if does not follow proper diet invites death inevitably.8

b) Role of diet in the prevention of diabetes

The person who takes wholesome diet with proper quantity and do the activities which promotes the health of dhatu (body elements) will never suffer from diabetes.9 It can be presumed that, diabetes is mainly caused by the intake of newly harvested food grains without aging, improperly cooked and fatty foods, excessive intake of food contains starch, aquatic animal meat, milk and milk products without doing any physical activities. Thus it recommends wholesome diet suitable to all dhatu (Body tissues and elements). Simile has been explained in the context of diabetes- As the trees attract the birds for their nest and shelter, in the same way the person who eats the food in unacceptable way, and indolent are inclined to diabetes10.

Ayurveda enumerates 20 types of Prameha where all are origin from a complex pathology. All the body elements which are having liquid composition indulge in the pathology as primordial factor. Three basic morbid factors Vata, Pitta, Kapha, among these Kapha having liquidity in excess is the main dosha (bhadra dosh shlehmah doshavishesha). Medas (Adipose tissue), Raktha (blood), Shukra (semen), Ambu (body fluid), Vasa (muscle fat), Lasika (lymph), Majja (bone marrow), Rasas(plasma), Ojus (vital substance in the body), responsible for body immunity, Mamsa (muscular tissue) are considered as vitiated tissue elements (dushya) and Murtavaha and Medovaha srotas (channels) are the basic seat or location of the disease.

c) The dietary causes of Diabetes

The etiology of Diabetes, many diets were mentioned, namely, excessive use of curds, flesh of domestic animals, fatty meat of animals dwelling in aquatic region and marshy region, excessive consumption of milk and milk products and their preparations, river water during rainy season and flooded river, newly harvested grains, Pudding prepared out of jiggery, and cane products, as to summarize the food products yielding high calorie, takes longer time for digestion, gets delayed metabolism are the causative factors for Diabetes.11

Many researches proved that diabetes is increasing day by day due to change of dietary habits. In developing countries, it is specially considered due to intake increased calories. Recent studies suggest that milk protein have the strongest Diabetogenic effect. If cow or buffalo milk is introduced before the age of 2-3months is specifically associated with the presence of antibodies to bovine serum albumin and increase the risk of insulin-dependent diabetes mellitus. Researchers measured the levels of anti-BSA (bovine serum albumin) and anti-ABBOS (Specific part of the albumin protein) antibodies in the serum of these children. Antibodies that react to the ABBOS also react with a beta cell surface protein that may represent a target for
autoimmune attack and ultimately causing insulin-dependent diabetes mellitus.¹²

The above dietary causes, the foods and drinks that increase Medas (adipose tissue) and Mutra (urine0 and diets that are sweet, sour, salty, fatty, not easily digestible, slimy, cold and alcoholic drinks such as beer and molasses are also considered as the causative factors. Latest research revealed that to prevent Diabetes one should avoid foods that cause rise in blood sugar levels. It has also proven that the belly fat with high level of blood triglycerides and decreased level of HDL (high density lipoprotein)¹³.

WHO identified one particular type of Diabetes as Malnutrition- Relates Diabetes Mellitus, which is common in India. Most of lean and thin young adults between 15 and 35 years age are affected with Diabetes, Which is often reported in Kerala and Orissa states. This type can be correlated to krisha pramehi. Thus suggests wholesome diet that is beneficial to all dhatus.

d) Contraindicated Diet (Apathya)

Some type of alcoholic preparations which are mentioned in Ayurvedic Pharmacological references such as Sauviraaka, shukata, Maikeya, and sura, milk, oil, ghee, sugarcane juice or sugar, jaggery, alkaline curd, grain cakes, sour substances, sour drinks, and meats of domestic, aquatic and swamp animals are contraindicated.

Researches proved that simple carbohydrate are broken down easily and increases blood glucose levels fast and which are the source of high calories. Hence simple sugars such as table sugar, candy, jam, cakes, and pastries are contraindicated.

e) Recommended diet (Pathya)

Aged cereals, such as Shali rice (variety of red rice), Shasthika rice, barley, wheat, Sharnyaka (Echinocha frumentacea Linn), Kodo Millet, Preparations of Bengal gram, green gram, vegetables having bitter taste. Atasi (Linum usitartissimum) commonly known as flax seeds, which are enriched with Omega-3. Anti-diuretic and fatless meat of wild animals are pathya (beneficial) for diabetic patients. Among spices black pepper, Ginger and in salt Rock salt the recommended diet.¹⁴

f) Unwholesome life style

- Avoiding Udwartana (Body massage with medicated powders which reduces kapha and reduces body fat)
- Vyayama varjana (Avoiding or not performing exercises and strenuous physical activities)
- Inappropriate sleeping habits¹⁵.

These are some essential factors that influence the metabolism. The improper sleep pattern and life style influences the fat metabolism and carbohydrate metabolism and also on the glycemic index.

g) Preferred Life style and exercises¹⁶

- Early morning awakening
- Brisk walking/light exercise for 30min
- Massage/ swimming
- Yoga-Asana (as Padmasana, Paschimottanasana, Suptavajasana, Surta-Namaskar, Dhanurasana)
- Pranayama(Bhashrika, Anuloma-Viloma)
- After lunch walking for 15min
- After dinner walking for 15min.

Various nutraceuticals and their role in Diabetes:

<table>
<thead>
<tr>
<th>Cereals</th>
<th>Raktha shali, Shasthika shali,Wheat, Yava, Kodrava, Natarka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>Adhaki, kulattha,Mudga,</td>
</tr>
<tr>
<td>Oils</td>
<td>Atasi, Ingudi, Nikumbha,</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Navapatola, Traduliyaka, Vatsaka, Masyakshi, Methika, Karavelliga, Palandu</td>
</tr>
<tr>
<td>Spices</td>
<td>Maricha, Lashuna, Upakunchika, Ardrika</td>
</tr>
<tr>
<td>Fruits</td>
<td>Indian gooseberry, jambui/java plum, kapitha</td>
</tr>
</tbody>
</table>

h) Cereals

Rice: Rice is the seed of the grass species Oryza glaberrima (African rice) or Oryza sativa (Asian rice). As a cereal grain, it is the widely consumed staple food for a large part of the world’s human population, especially in Asia and Africa. Cooked, un enriched, white, long-grained rice is composed of 68% water, 28% carbohydrates, 3% protein, and negligible fat (table). In a 100 gram serving, it provides 130 calories and contains no micronutrients in significant amounts, with all less than 10% of the Daily Value (DV). Cooked, white, short-grained rice also provides 130 calories and contains moderate amounts of B vitamins, iron, and manganese (10–17% DV) per 100 gram amount. The medical value of various types of rice, such as Shasthika shali, Raktha shali, and parched rice have been documented in Charaka Samhita and Sushrutha samhita. Navara a type of Kerala rice widely used in as body enriching to exclude end toxins and free radicals. Colored rice (black and red) are rich in minerals and polyphenols and have antioxidant properties. Basumathi rice has low glycemic index and re useful in weight-reducing diets.¹⁷

Raktha shali and shasthika shali pacifies the vitiated tridosha and thus useful in diabetics. More than one year aged rice considered light for digestion and beneficial in Diabetics in comparison with new rice.¹⁸

Wheat:

Wheat is a major ingredient in such foods such as bread, porridge, crackers, biscuits, muesli, pancakes, pasta and noodles, pies, pastries, pizza, polenta and semolina, cakes, cookies, muffins, rolls, doughnuts, gravy, beer, vodka, boza (a fermented
beverage), and breakfast cereals. In 100 grams, wheat provides 327 kilocalories and is a rich source (20% or more of the Daily Value, DV) of multiple essential nutrients, such as protein, dietary fiber, manganese, phosphorus and niacin (table). Several B vitamins and other dietary minerals are in significant content. Wheat is 13% water, 71% carbohydrates, and 1.5% fat. Its 13% protein content is mostly gluten (75-80% of the protein in wheat). 00 g (3.5 oz) of hard red winter wheat contain about 12.6 g (0.44 oz) of protein, 1.5 g (0.053 oz) of total fat, 71 g (2.5 oz) of carbohydrate (by difference), 12.2 g (0.43 oz) of dietary fiber, and 3.2 mg (0.00011 oz) of iron (17% of the daily requirement); the same weight of hard red spring wheat contains about 15.4 g (0.54 oz) of protein, 1.9 g (0.067 oz) of total fat, 68 g (2.4 oz) of carbohydrate (by difference), 12.2 g (0.43 oz) of dietary fiber, and 3.6 mg (0.00013 oz) of iron (20% of the daily requirement).

**Yava (Barley Hordeum vulgare L.)**

Yava (Barley) which is high in fiber content (4gm in 100gm) among all relative grains, is highly recommended in Diabetic diet in different forms. Ruksa (dry), Kaphashamaka (Pacifies kapha) properties of Yava support its usage in Diabetes, were the condition Bahudrava Shlesha can be managed. Use of the mixture of whole wheat Atta and barley is considered Kaphashamak and is recommended for diabetes. In a 100-g serving, cooked barley provides 123 Calories and is a good source (10% or more of the Daily Value, DV) of essential nutrients, including, dietary fiber, the B vitamin, niacin (14% DV), and dietary minerals including iron (10% DV) and manganese (12% DV).19

In another study on adult diabetic rats with a diet containing barley had a modulating effect on the symptoms of diabetes. It was presumed by its very high content of chromium (5.69µg/g).

In charaka samhitha Prameha chikitsa Yava is indicated as both diet and medicine. Different recopies such as porridge, drink, decoction and pancake and soft bread (pulaka, and roti) made out of barley powder is the choice of diet and medicine. This usage of different kinds of millets helps in absorption and excretion of excessive water, which is coined as kleda in Ayurveda.20 the classics texts of ayurveda gives more importance to the barley as part of diet and medicine, simplest form of barley, the powered barley can be licked with honey.

**Kodrava (Paspalum scrobicularum Linn.)**

This was considered as poor men’s diet in ancient days. This is considered to be the best substitute of Kodo millet is a nutritious grain and a good substitute to rice or wheat in hilly region.

The grain is composed of 11% of protein, providing 9 grams/100 g consumed It is an excellent source of fibre at 10 grams (37-38%), as opposed to rice, which provides 0.2/100 g, and wheat, which provides 1.2/100 g. An adequate fiber source helps combat the feeling of hunger. Kodo millet contains 66.6 g of carbohydrates and 353 kcal per 100 g of grain, comparable to other millets. It also contains 3.6 g of fat per 100 g. It provides minimal amounts of iron, at 0.5/100 mg, and minimal amounts of calcium, and 27/100 mg. Kodo millets also contain high amounts of polyphenols, an antioxidant compound21.

**Nartaka (Eleusine coracana L. Gaerth)**

The Finger millet commonly known as Naachni in North India and Ragi in South India. This is one of staple food used in Karnataka. This has not mentioned in any samhithas in the explanation of aharavarga, later down the line nighantus gives the explanation. Shaligrama nighantu explains the property as laghu (light of digestion), and blood purifier too.22 The above mentioned properties of nartaki are helpful in treatment of prameha and madhumeha also the seed coat is the rich source of dietary fiber (3.7gm%) and phenolic compounds and calcium (370mg/gm), the other nutritional values per 100gm is quoted as Protein 7.6gm, Fat 1.5gm, carbohydrate 88gm, vitamin A 0.48mg, thiamine (Vit B1 0.33mg), Riboflavin (Vit B2 0.11mg), Niacin (Vit - B3) 1.2mg23. Of all the cereals and millets, finger millet has the highest amount of calcium (344 mg%) and potassium (408mg%). The cereal has low fat content (1.3%) and contains mainly unsaturated fat. 100 grams of Finger millet has roughly on an average of 336 KCal of energy in them. However, the millet also contains phytates (0.48%), polyphenols, tannins (0.61%), trypsin inhibitory factors, and dietary fiber, which were once considered as “anti nutrients” due to their metal chelating and enzyme inhibition activities (Thompson 1993) but nowadays they are termed as neutraceuticals. Being non-glutinous, finger millet is safe for people suffering from gluten allergy and celiac disease. It is non-acid forming, and hence easy to digest. Finger millet is rich in amino acids (Tryptophan, Threonine, Valine, Isoleucine and Methionoine). The Glycemic Index (GI) values were less for wheat and ragi-based foods. After the decortication process also, the glycemic index of ragi was lower than of the two rice products. Wheat based and finger millet based formulations are suitable as a food supplement or meal replacer for non insulin dependent diabetes mellitus (NIDDM) subjects.

**i) Pulses**

Pulses are highly nutritious foods that are included as part of Canada’s Food Guide to promote healthful eating, and they have established health benefits that can contribute to the dietary management of diabetes. A review of studies that have examined the effects of pulse consumption on health outcomes, integral to the management of diabetes, provides credible evidence for improvements in glycemic control, reduction of blood lipids and regulation of body weight.
Results from acute feeding trials suggest that postprandial blood glucose response is significantly attenuated by a single pulse serving of between three-quarters and 1 cup. At lower doses, pulses attenuate postprandial blood glucose response more than similar amounts of starchy foods. Long-term pulse consumption of 5 cups per week appears to result consistently in improvements in glycemic control.

**Adhaki (Red Gram; Cajanus cajan Linn. Millsp.)**

Enumeration of Adhaki as the part of treatment in prameha in any samhita is not seen. Bhavaprakasha nighantu explains the property of adhaki as which pacifies the vitiated body humors such as pitta, kapha and blood. and considered as antibese, vatajanana property which is more suitable in obese diabetes. The red gram commonly known as Toor dal, used in Indian subcontinent for preparing soups. It contains essential amino acids, dietary fibers 15gms/100gm. In a study conducted at AIMS pharmacology department proved hypoglycemic and antihyperglycemic activity.

**Kuluttha (Horse gram: Dolichos biglorus. Linn.)**

Kuluttha a prescribed diet for diabetics and as used as one of the ingredients Dhanvantari ghrita and is used in Diabetic boils and abscess. It is considered Kaphavatashamak (Pacifies vitiated kapha and vata) hot in potency and acts as Pittavardhak. The kuluttha is well known for its diuretic property. Based on these properties it is mainly indicated in Kapha and Vata varieties of prameha and Medoroga (Obesity). Horse gram seed contains carbohydrate (57.2% w/w), protein (22% w/w), dietary fiber (5.3% w/w), fat (0.50% w/w), calcium (287 mg), phosphorus (311 mg), iron (6.77 mg) and calories (321 kcal) as well as vitamins like thiamine (0.4 mg), riboflavin (0.2 mg) and niacin (1.5 mg) per 100 grams of dry matter. Its nutritional content is partly dependent on soil conditions and the weather. Its less appealing taste has led it to be not commonly eaten. Scientists from the Indian Institute of Chemical Technology have found that unprocessed raw horse gram seeds not only possess antihyperglycemic properties, but also have qualities which reduce insulin resistance. The scientists made a comparative analysis between horse gram seeds and their sprouts and found that the seeds have greater beneficial effects on the health of hyperglycemic individuals. The majority of antioxidant properties are confined to the seed coat and its removal would not do any good. Raw horse gram seed is rich in polyphenols, flavonoids, and proteins, major antioxidants present in fruits and other food materials. The seed has the ability to reduce postprandial hyperglycemia by slowing down carbohydrate digestion and reducing insulin resistance by inhibiting protein-tyrosine phosphatase 1 beta enzyme.

**Mudga (Green gram: Vigna radiate Linn. / Phaceolus radiates Linn.)**

Mudga is known to possess a unique property in initiating physiological effects in the human body. Green gram, a principle pulse used as a daily food article, exhibits a potential to act against this. In this regard, Ayurveda recommends its use in daily diet and modern research also directs towards the same recommendation. The pharmacodynamics of mung in Ayurveda has been explained to be that as Madhura (Sweet) and Kashaya (astringent) in taste, Laghu (light for digestion), ruksha (Dry), sheetaveerya (cold in potency), katu vipaka (post digestive transformation into pungency) and it exhibits Kaphapittahara Vatakaratva (pacifies kapha and pitta whereas aggravates Vata). It is known to be drushtiprasadaka (improves quality of vision). Green gram is known for its high nutritional value. 100 g of it produces 334 Kcal of energy. 17 It is rich in carbohydrates (56.7 g/100 g) and is a very good source for minerals like Potassium (843 mg/100 g), Magnesium (127 mg/100 g), Calcium (124 mg/100 g), Phosphorus (326 mg/100 g) and Iron (4.4 mg/100 g). Vitamins like Carotene, Thiamine, Niacin, Riboflavin, Ascorbic acid and Folic acid are also present in Mung. It is considered one of the best sources for proteins and constitutes a number of essential amino acids such as Arginine, Histidine, Lysine, Tryptophan, Phenylalanine, Leucine, Isoleucine, Tyrosine, Valine, Threonine, Cystine and Methionine. Mung, hence is considered to be a substantive source of dietary proteins and carbohydrates. Mungbean provides significant amounts of dietary iron to plant based diets in developing countries where Mungbean is consumed. 18 Certain chemical components such as flavanoids (Flavones, isoflavones and isoflavanoids), phenolic acids (Gallic acid, Vanillic acid, Caffeic acid, Cinnamic acid, protocatechuic acid, Shikimic acid, p- hydroxybenzoic acid etc), and organic acids isolated from Mung in recent years, supports its health promoting action as mentioned in the classics.

**j) Oils**

The recommended oils for diabetes are Nikumbha (danti: Baliospernum montanum), Ingudi, (Balanites Aegyptica Linn), Sarshapa (Musturd), and Atasi (Linum usitattissimum). These oils are pungent in nature and low quantities of these oils are sufficient in cooking to give desired taste and flavor.

**Atasi Taila (Linseed oil)**

Linseed oil, also known as flaxseed oil or flax oil (in its edible form), is a colourless to yellowish oil obtained from the dried, ripened seeds of the flax plant (Linum usitattissimum). Linseed oil is an edible oil in demand as a dietary supplement, as a source of - Linolenic acid, (an omega-3 fatty acid). In parts of Europe, it is traditionally eaten with potatoes and quark. It is regarded as a delicacy due to its hearty taste and...
ability to improve the bland flavor of quark. Raw cold-pressed linseed oil – commonly known as flax seed oil in nutritional contexts – is easily oxidized, and rapidly becomes rancid, with an unpleasant odour, unless refrigerated. Linseed oil is not generally recommended for use in cooking. Alpha linolenic acid (ALA) while bound to flaxseed ALA can withstand temperatures up to 175 °C (350 °F) for two hours.

The other two oils Ingudi and Nikumbha taila are not commonly available and not commonly used. Recent research proved that there has been alarming increase in the prevalence of diabetes and cardiovascular ailments in Indians. Earlier traditional cooking fats were condemned to be atherosclerogenic and replaced with refined multi branded refined vegetable and other seed oils presuming as “heart-friendly and diet friendly oil” because of their polyunsaturated fatty acid content. Unfortunately this has not been able to curtail the increasing incidences of diabetes and heart diseases. The current data on dietary fats indicate that is not just the presence of PUFA but the type of PUFA that is important.

k) Vegetables

Vegetables supply vitamins, minerals, and fiber. The best vegetable choices can be found to have low amounts of carbohydrates. In Ayurveda while explaining the treatment of prameha, the green leafy vegetables which are having bitter and astrigent flavor are more emphasized. The vegetables, Navapatola (Trichosanthes dioica) commonly known as pointed guard, Tanduliyaka (Amaranthus plant), Vastuka, (Chenopodium album) commonly known as wild spinach as goose foot. Mutsyakshi (Alternanthera sessiles), with these all bitter vegetables such as Methika (Trigonella foenum), Karavelaka commonly known as bitter guard, (Momordica charantia) are recommended. Navapatola is Laghu, Deepana and pachana, which is digestive and carminative. This pacifies vitiated tridosha hence, it is wholesome in diabetics. One experimental studies on rats’ aqueous extract of Trichosanthes dioica Roxb. Was proved for its anti hyperglycemic action.

Navapatola is laghu, Dipan (appetizer), Pachan (digestive) and pacifies the vitiated Tridosha. Hence, it is wholesome in diabetics. Tanduliyaka is Laghu, Ruksha, Kaphapittashamak and Vishaghna. Decreases risk of cardiovascular disease. Diabetes is the pre disposing cause for cardiovascular and renal disorders when it becomes uncontrolled. By substituting Amaranthus as one of the dietary supplement one can prevent the fore coming complications of diabetes. Presence of lysine (an essential amino acid) along with vitamin E, iron, magnesium, phosphorus and potassium and vitamin C helps to fight against free radicals responsible for aging. Since it is very rich source of multi vitamins, minerals and other forms of micronutrients this also helps in prevention of Diabetic neuropathy. Mentholic extract of the stem of Amaranthus spinous Linn showed significant antidiabetic antihyperlipidemic effects on STZ-induced diabetic rats.

Mutsyakshi (Alternanthera sessilis), Alternanthera sessilis is an aquatic plant known by several common names, including ponnanganni (in Tamil), ponnaganti aaku (in Telugu), honnagone (in Kannada), mukunuwenna (in Sinhala), sessile joyweed and dwarf copperleaf. It is used as a vegetable specially in Sri Lanka and some Asian countries. The plant is bitter, sweet, constipating and cooling in action. This is a non-toxic plant and eaten as vegetable and salad. The young shoots contain five percent protein and 16.7 mg (per 100 g) iron. Leaves also contain a good amount of alpha- and betatocopherols. The properties of this plant as explained as laghu, bitter and astrignent in taste, Pacifies vitiated Pitta, Kapha and blood. This plant has proved promising results in eye disorders, hair fall treatment and wound healing. This is commonly used vegetable during monssons.

Methika (Trigonella foenum)

This is one among the popular green herb which is part of diet in India. Irrespective of Diabetes or any illness, used as common vegan diet. The seeds, Fresh plant is used in making flat breads, soups, khichidi etc. The fresh juice is also edible. It is found to have hypoglycemic, hypcholesterolemic property on pharmacologic screening.

Lashuna (Garlic: Allium sativum Linn)

Lashuna the unexceptional vegetable or the spice used in Indian cuisine. As the Ayurveda text explains its properties, this bears five tastes (sweet, salt, bitter, pungent and astrigent) with predominance of pungent, heavy and penetrating and hot in potency. It is the pacifier of Vata, and favors the properties of Pitta and Raktha.33 Garlic is widely used around the world for its pungent flavor as a seasoning or condiment. Fresh or crushed garlic yields the sulfur-containing compounds alllicin, ajoene, diallyl polysulfides, vinylthiin, Sallycysteine, and enzymes, saponins, flavonoids, and Maillard reaction products, which are not sulfur-containing compounds. On Pharmacological Screening its Hypocholesterolemic, hypolipidemic, antioxidant, antiaging, cardioprotective, hypoglycemic, hypotensive, fibrinolivty actions were proved. 34 The typical serving size of 1–3 cloves (3–9 grams), garlic provides no significant nutritional value, with the content of all essential nutrients below 10% of the Daily Value (DV) (table). When expressed per 100 grams, garlic contains several nutrients in rich amounts (20% or more of the DV), including vitamins B6 and C, and the dietary minerals manganese and phosphorus. Per 100 gram serving, garlic is also a moderate source (10–19% DV) of certain B vitamins, including thiamin and pantothenic acid, as well as the dietary minerals calcium, iron, and zinc (table). The composition of raw garlic is 59% water, 33%
carbohydrates, 6% protein, 2% dietary fiber, and less than 1% fat. Several studies suggest that consuming moderate amounts of garlic (at least one clove or equivalent daily) when you have type 2 diabetes, can help regulate your blood sugar levels and improve insulin sensitivity. Results from nine studies looking at garlic and diabetes showed a significant reduction in fasting blood glucose (sugar) within 1-2 weeks in the group taking 0.05-1.5g of garlic supplement daily. Additionally, A1C was significantly reduced by week 12. Garlic consumption was also shown to reduce LDL (bad) cholesterol and increase HDL (good) cholesterol. Most of its beneficial effects, such as antioxidant, antimicrobial, and anti-tumor, involve sulfur-derived amino acids. In a study the acute effects of aqueous effects of extract of garlic on plasma glucose and cholesterol levels in normal rats were re-evaluated. It was confirmed that garlic contained an active fraction exerting both glucose- and cholesterol lowering activity.

Upakunchika (Nigella sativa Linn.)

Upakunchika (black cumin) is bitter and pungent in taste, hot in potency and penetrating in nature. It is indicated in diabetes and considered as cardiotonic. Its hypoglycemic, hypotensive, cardiovascular, anti-diabetic, and cardiac depressant actions were proved on pharmacologic screening. A study was conducted to evaluate the possible protective effects of the volatile oil of Nigella sativa seeds on insulin immunoreactivity and ultra structural changes of pancreatic beta cells in STZ-induced diabetic rats. A therapeutic protective effect in diabetes by decreasing morphologic changes, preserving pancreatic beta cell integrity and protecting against oxidative stress was observed. Oils are 32% to 40% of the total composition of N. sativa seeds. N. sativa oil contains linoleic acid, oleic acid, palmitic acid, and trans-anethole, and other minor constituents, such as nigellicine, nigellidine, nigellimine, and nigellimine N-oxide. Aromatics include thymoquinone, dihydrothymoquinone, p-cymene, carvacrol, α-thujene, thymol, α-pinene, β-pinene and trans-anethole. Protein and various alkaloids are present in the seeds.

Ardra (Zingiber officinale Rosco.)

Ardra (black pepper) is pungent in taste with hot potency. This has property of pacifying vitiated Tridosha. It is indicated in diabetes and heart disease and used as rejuvenator and aphrodisiac. Its hypolipidemic, anti-athersclerotic, cardiovascular, antioxidant, anti stress, and hypoglycemic actions were proved on pharmacologic screening. In a study over 40 anti oxidative compounds from Zingiber Officinale Rosco. Were found effective against development of diabetic cataract in rats and can be suggested for prevention or delay of diabetic complications.

1) Fruits

Contemporary medical science advices not to consume fruits, fruit juices because of high sucrose contents. Generally, eating fruit as part of a healthful diet should not increase the risk of diabetes. A diet that is high in sugar, refined carbohydrates, and saturated fats is likely to be more of a risk. However, consuming more than the recommended daily allowance of fruit may add too much sugar to the diet. Most fruits have low GI scores, but melons and pineapple are in the high range. Processing food increases its GI ranking, so fruit juice has a higher score than a whole piece of fruit. Ripe fruit also has a higher GI score than unripe fruit. In Ayurveda eating fruits such as Amla (Indian gooseberry), Jambo (Jamun, Wax apple), Kapittha (wood apple) does not cause any ill effect on Glycemic index.

Jambo (Syzygium cumini (L) Skeels.)

This is one among the most common medicinal plants used to treat diabetes. The tender leaves, ripened fruit, the bark all are intended to have hypoglycemic activity. Raw fruit is 83% water, 16% carbohydrates, 1% protein, and contains negligible fat. In a 100 gram reference amount, the raw fruit provides 60 calories, a moderate content of vitamin C. It has a mixed taste of sweet, astringent, sour, cool and light. This has property of pacifying vitiated pitta and kapha diseases. The exact mechanism of action of Jamun in lowering the blood sugar and cholesterol level is not known. The Jamun may have employed several putative mechanisms to bring out its effects (Figure 2). The diabetes is triggered by induction of free radicals. Jamun may have reduced free radicals and improved the functioning of β-cells of pancreas reducing the sugar level. Jamun also stimulates the activation of different enzymes like catalase glutathione peroxidase, glutathione-transferase and increased synthesis of glutathione and depletes lipid peroxidation that may have also helped to reduce the sugar cholesterol levels in the blood. Jamun may have reduced the activity of α-amylase, which is upregulated in the diabetes. The α-amylase activity has been found to be reduced by Jamun. At molecular level presence of Jamun may have upregulated the PPARγ and PPARα leading to the suppressed activation of transcription factors including NF-κB, nitric oxide synthase (iNOS), tumour necrosis factor-alpha (TNF-α) and cyclooxygenases causing reduced inflammation and protection against diabetes and hyperlipidaemia. Apart from this Jamun may have also upregulated the transcription of Nrf2 leading to increase in the antioxidants that may have resulted in the proper functioning of β-cells of pancreas. The jambu in different forms such as seed powder, decoction of tender leaf, fermented preparations in ayurveda such as Asava and Arista are highly indicated in Diabetic and pre diabetic conditions.
Kapitta (Feronia elephantum correa.)

Kapitta, commonly known as Wood apple which is having very hard capsule which encapsulates very nutritious pulp which is sweet and astringent sometimes slightly sour in taste. This fruit resembles fruit of Beil. The fruit pulp of the plant has been reported in traditional medicine as a curative for various ailments such as diarrhea, puritis, impotence, dysentery, heart disease, vomiting, and anorexia, and has also been used for the treatment of asthma and tumours, and as a liver tonic. A decoction (Kadha) administered orally before breakfast has been advocated by local traditional medical practitioners as a tonic purpose. The fruit pulp of Feronia elephantum (Corr.) contains flavonoids, phytosterols, tannins, carbohydrates, triterpenoids and amino acids as its chemical constituents. The gum of the plant are widely used as a curative for diabetes mellitus in Indian system of medicine and also used as a folklore remedy to control the blood glucose level. Hence this study was undertaken to investigate the effect of methanolic extract of Feronia elephantum Corr. fruits pulp in normal and alloxanised diabetic rats 44.

IV. Conclusion

Diabetes the coined term for Prameha or the Madhumeha is one of the leading health problem in the world. There are 425 million people around the world who have been suffering from diabetes in 2017. People hurlding to combat this or to maintain blood sugar level with multiple module. People are Craving for the diabetic diet, and exercise schedules so that they can outreach the problem. Traditional Indian Diets, Yoga, Exercises in regular basis are prescribed to prevent and treat diabetics are functional and used as both food and medicine. Ayurveda emphasizes their selection on the basis of doshas involved, and properties of food stuffs which can be used as medicine. These are selected on fundamental principles, such as Rasa guna, Vriya, Vipaka, Prabhava (Collectively these are called as physical and pharmaco dynamic properties).In recent researches they are proved to contain rich amount of dietary fiber, anti oxidants, and other active principles which reduces free radicals. It is time to highlight this ancient Indian Wisdom At global level and make the scholars aware about the dept of knowledge and foresight of ancient Indian Scholars.

By considering all the facts this can be wisely concluded as

1. Many food we eat becomes the nutraceutical which should be used wisely according to requirement and majority or those are proved useful many researches.
2. Due to varsity and changed food and life style culture some time tested nutraceuticals are not in usage. Overcoming to change in civilization adaptations and agrgricgations many food cultures are used wisely in tribal and non urban areas. There is necessity to high light and propogate the benefit of these diets in the public domain.
3. Based on fundamental and contemporary scientific researches more diets and exercises are to be evaluated for the benefit of common man. There is also a need to popularize the true research outcomes to common man to take preventive steps from becoming young diabetics.

References Références Referencias

11. Fadia Yousif Abdel Megeid, Zubaida Abdel Nabi Bakeit and Badriah Omar Ibrahim A. AbdulKarim, Early Introduction of Cow's Milk and short Duration


Results of Questionnaire Survey on Gum Chews of Thirty-Days for University Female Students

By Naomi Katayama & Shoko Kondo
Nagoya Women’s University

Abstract- It had pointed out that modern people have a weakening ability to bite. The media had reported that the number of children with weak chewing power has increased since the 1980s, and the media were concerned about their future health. Therefore, in this study, we conducted a questionnaire survey after chewing ability training after chewing gum once a day for one month for chewing ability training. As a result, 23 female university students participated, and after 30 days, six people answered that they got chewing ability by chewing gum everyday. Also, eight people answered that they felt that their jaw had strengthened. And five of the participants answered that saliva secretion had improved. Six of the participants replied that they had reduced their snack intake. However, of the 23 participants, eight could not chew the gum daily for 30 days. Also, 13 out of 23 of the participants replied that chewing gum every day for 30 days was hard to do. In the future, we would like to enlighten people to develop chewing ability training by making a habit of chewing gum everyday.

Keywords: chewing training, chewing gum, questionnaire survey, university female students.

GJMR-K Classification: NLMC Code: WA 900
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Keywords: chewing training, chewing gum, questionnaire survey, university female students.

I. Introduction

It has pointed out that modern people in Japan have reduced masticatory power. The number of soft foods increased, and the number of children with weak chewing power increased in the 1980s. The kindergarten scene and experts pointed out one after another, and the media coverage of children with weak chewing power also took up. Experts are worried about the future of these poorly chewable children. Because, if the force of chewing is weak, the muscles for chewing and the bones of the jaw not sufficiently developed, which causes disorder of the alignment of teeth and temporomandibular disorders. Also, if you can chew well after growth, your jaw will move well, and the blood flow to the brain will increase, and the brain will become active, which will help prevent blurring and dementia. Therefore, in this study, we conducted a self-administered questionnaire survey after chewing gum for one day one time during a month to 23 female university students who understood the study contents and agreed to the consent form, and report the results.

II. Materials and Methods

a) Participants

In this study, 23 female university students participated. They understood the study contents and agreed to the consent form.

b) Chewing questionnaire survey

Participants had the gum chewed for one minute every day for 30 days. After that, a self-administered questionnaire survey conducted for the participants. The questionnaire items shown in Table 1.

Table 1: Questionnaire survey about 30 days of chewing xylitol gum

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could you chew the gum for 30 days?</td>
<td></td>
</tr>
<tr>
<td>Was it hard to chew gum everyday?</td>
<td></td>
</tr>
<tr>
<td>Did chewing gum change your appetite?</td>
<td></td>
</tr>
<tr>
<td>Do you think chewing gum has improved your chewing ability?</td>
<td></td>
</tr>
<tr>
<td>Do you think chewing gum helps improve saliva secretion?</td>
<td></td>
</tr>
<tr>
<td>Do you think chewing gum prevented your mouth from getting dry?</td>
<td></td>
</tr>
<tr>
<td>Do you think chewing gum reduce your dietary intake?</td>
<td></td>
</tr>
<tr>
<td>Do you think that chewing gum gives your jaw more strength?</td>
<td></td>
</tr>
<tr>
<td>Did chewing gum reduce your snack intake?</td>
<td></td>
</tr>
</tbody>
</table>

c) Ethical review board

This study conducted with the approval of the Ethical Review Board (Nagoya women’s university ‘hitwo mochii ta kennekyuu nikansuru iiinkai’). The approval number is 30-7 and 30-17.

Author α: Graduate School of Nagoya Women’s University, Nagoya City, Japan.
Corresponding Author α: Nagoya Women’s University, Nagoya City, Japan. e-mail: naomik@nagoya-wu.ac.jp
Author α: Watanabe Hospital, Noma, Aichi, Japan
### III. Results

**a) Questionnaire survey results**

The results show in Table 2 and 3. The average age of female university students ± standard deviation was 20.6 ± 0.5. The results of the questionnaire survey were as follows. Every day, 15 people chewed gum for 30 days. Also, 15 people said that chewing gum every day was hard to do. The chewing gum was most common in the morning and afternoon, with six participants each. Three participants answered that chewing gum reduced their appetite. Six participants replied that they were chewing well by chewing the gum. Five participants answered that they thought that chewing gum improved salivation. Eight participants said that they thought they were less thirsty. Two participants replied that they thought they were eating less. Eight participants answered that they thought they had jaw strength. Also, in the comments section of some participants, there were comments such as thinking that they started chewing food well, that they could chew, and that they felt their jaws became stronger. A further six participants replied that they were eating less snacks. In the comment section, there was a note that they were not hangry because they felt full. There was also a note that chewing gum prevented them from eating other snacks.

**Table 2:** Time of chewing gum (n=23)

<table>
<thead>
<tr>
<th>Time</th>
<th>Early morning</th>
<th>Morning</th>
<th>Afternoon</th>
<th>15:00</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 3:** Questionnaire survey results after 30 days of chewing xylitol gum (n=23)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could you chew the gum for 30 days?</td>
<td>15</td>
<td>8 (34.8%)</td>
</tr>
<tr>
<td>Was it hard to chew gum everyday?</td>
<td>13</td>
<td>10 (43.5%)</td>
</tr>
<tr>
<td>Did chewing gum change your appetite?</td>
<td>3 (13.0%)</td>
<td>20 (87.0%)</td>
</tr>
<tr>
<td>Do you think chewing gum has improved your chewing ability?</td>
<td>6 (26.1%)</td>
<td>17 (73.9%)</td>
</tr>
<tr>
<td>Co you think chewing gum helps improve saliva secretion?</td>
<td>5 (21.7%)</td>
<td>18 (78.3%)</td>
</tr>
<tr>
<td>Do you think chewing gum prevented your mouth from getting dry?</td>
<td>8 (34.8%)</td>
<td>15 (65.2%)</td>
</tr>
<tr>
<td>Do you think chewing gum reduce your dietary intake?</td>
<td>2 (8.7%)</td>
<td>21 (91.3%)</td>
</tr>
<tr>
<td>Do you think that chewing gum gives your jaw more strength?</td>
<td>8 (34.8%)</td>
<td>15 (65.2%)</td>
</tr>
<tr>
<td>Did chewing gum reduce your snack intake?</td>
<td>6 (26.1%)</td>
<td>17 (73.9%)</td>
</tr>
</tbody>
</table>

### IV. Discussion

By adding chewing ability, it can be expected to promote jaw development and saliva secretion, and to promote digestive absorption. By chewing well, it may act on the satiety center and prevent overeating and overeating snacks. In the comments section of the female students who participated in this study, there were comments such as reduced intake of snacks, more chewing ability, and feeling better chewing. However, 15 out of 23 participants (65%) were able to chew gum daily for 30 days. Not everyone can chew gum daily when 13 participants (57%) answered that it was difficult to chew gum every day. There are many Japanese people who feel that even general gum is hard, so manufacturers sell soft gum to secure sales. As a result of this study, it was difficult to chew gum every day. There are many Japanese people who feel that even general gum is hard, so manufacturers sell soft gum to secure sales. As a result of this study, it was difficult to chew gum every day. However, on the other hand, chewing training using gum can be expected to be effective because some students felt that chewing ability was improved by chewing gum every day (26%). That saliva secretion was improved (22%). Since rice is the staple food of Japanese food, and it is a soft food, it may be one of the reasons for this result that there are few opportunities to chew hard food.

Educating about teeth has been reported to help sustain oral care \(^1\) \(^2\) \(^3\) \(^4\). In overseas reports, female brush their teeth better than male and even use dental floss \(^5\) \(^6\). It seems that many people brush their teeth in the morning and at night \(^5\). There have been reports of measuring chewing power by various methods in past research. For example, device development and calculation models \(^7\) \(^8\) \(^9\) \(^10\). Because it has teeth, we can chew well, which gives better stimulation to our brain \(^11\). This stimulation is especially likely to prevent dementia in the elderly, and the results of chewing training using gum have been reported \(^12\). We would like to enlighten people to increase the chances of developing chewing ability by increasing the chances of chewing hard food. We would like to encourage chewing training using the gum.

### V. Conclusions

By chewing well, it works on the satiety center and prevents overeating. A better effect on jaw development and dentition can be expected due to its masticatory power. Twenty-three female university students chewed gum daily for 30 days and then asked them to complete a chewing ability questionnaire. As a result, 15 participants chewed gum daily, and 13...
participated had difficulty chewing gum every day. Some participants noted in the comments that chewing gum every day was tired of their jaws, while others noted that they felt better saliva production and felt chewing. We would like to enlighten people to increase the chances of developing the chewing ability by increasing the chances of chewing hard food.

Acknowledgements

We would like to express our deep gratitude to all female students for their cooperation as participants in this research.

References Références Referencias

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18. **Go to seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. **Refresh your mind after intervals:** Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.
20. **Think technically:** Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. **Adding unnecessary information:** Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. **Report concluded results:** Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. **Upon conclusion:** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

**Informal Guidelines of Research Paper Writing**

**Key points to remember:**

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

**Final points:**

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

*The introduction:* This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

*The discussion section:* This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

*General style:* Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

*To make a paper clear:* Adhere to recommended page limits.
Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don’t address the reviewer directly. Don’t use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.
The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

*Materials may be reported in part of a section or else they may be recognized along with your measures.*

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.
Results:
The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:
- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:
- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:
As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:
If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:
The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

**Approach:**

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

**The Administration Rules**

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

*Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.*

*Segment draft and final research paper:* You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

*Written material:* You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.
**Criterion for Grading a Research Paper ( Compilation )**

**By Global Journals**

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

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<thead>
<tr>
<th>Topics</th>
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<td>E-F</td>
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<tr>
<td>Abstract</td>
<td>Clear and concise with appropriate content, Correct format. 200 words or below</td>
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<td></td>
<td>Unclear summary and no specific data, Incorrect form Above 200 words</td>
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<td></td>
<td>No specific data with ambiguous information Above 250 words</td>
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<tr>
<td>Introduction</td>
<td>Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited</td>
</tr>
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<td></td>
<td>Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter</td>
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<tr>
<td></td>
<td>Out of place depth and content, hazy format</td>
</tr>
<tr>
<td>Methods and Procedures</td>
<td>Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads</td>
</tr>
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<td>Difficult to comprehend with embarrassed text, too much explanation but completed</td>
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<td></td>
<td>Incorrect and unorganized structure with hazy meaning</td>
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<tr>
<td>Result</td>
<td>Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake</td>
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<td>Complete and embarrassed text, difficult to comprehend</td>
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<td>Irregular format with wrong facts and figures</td>
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<tr>
<td>Discussion</td>
<td>Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited</td>
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<td>Wordy, unclear conclusion, spurious</td>
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<td>Conclusion is not cited, unorganized, difficult to comprehend</td>
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<td>References</td>
<td>Complete and correct format, well organized</td>
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<td>Beside the point, Incomplete</td>
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