JDEAN

Official Journal of Diabetes and Endocrinology Association of Nepal

INAUGURAL ISSUE

ISSN - 2594-3367

VOL. 1, ISSUE 1, JULY – DEC 2017
Journal of Diabetes and Endocrine Association of Nepal

JDEAN

Journal of Diabetes and Endocrinology Association of Nepal is biannually, peer reviewed and open accessed international journal. It is an official journal of Diabetes and Endocrine Association of Nepal and is published with the sole aim of promoting and sharing quality medical information. Journal of Diabetes and Endocrinology Association of Nepal publishes reports of experimental and clinical research on Diabetes and Endocrine.

The Statements or opinion expressed in the journal are the personal views of authors and do not represent the official views of JDEAN editorial board or Diabetes and Endocrine Association of Nepal.

JDEAN is published bi-annually; Subscription rates are as follows:

<table>
<thead>
<tr>
<th></th>
<th>INSTITUTIONAL</th>
<th>PERSONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual</td>
<td>Per Copy</td>
</tr>
<tr>
<td>Nepal</td>
<td>Nrs. 2000</td>
<td></td>
</tr>
<tr>
<td>SAARC Countries</td>
<td>USD 100</td>
<td>USD 50</td>
</tr>
<tr>
<td>International</td>
<td>USD 160</td>
<td>USD 80</td>
</tr>
</tbody>
</table>

Above Subscription rates are excluding postal charges.

Principal Contact
Dr. Robin Maskey
Editor-in-Chief
Journal of Diabetes and Endocrinology Association of Nepal
Address: B.P. Koirala Institute of Health Sciences
Tel: 9852045177
Email: journaldean2017@gmail.com

Disclaimer
JDEAN discloses the following disclaimers.

Disclaimers
1. The information, opinions and views presented in the Journal of Diabetes and Endocrinology Association of Nepal reflect the views of the authors and contributors of the articles and not of the Journal of Diabetes and Endocrinology Association of Nepal or the Editorial Board or its publishers.
2. Publication of articles, advertisements or product information does not constitute endorsement or approval by the journal and/or its publisher.

3. The Journal of Diabetes and Endocrinology Association of Nepal and/or its publisher cannot be held responsible for any errors or for any consequences arising from the use of the information contained in this journal.

4. Although every effort is made by the editorial board and the publishers to see that no inaccurate or misleading data, opinion or statement appear in this journal, the data and opinions appearing in the articles including editorials and advertisements herein are the responsibility of the contributors concerned.

5. The publishers and the editorial board accept no liability whatsoever for the consequences of any such inaccurate or misleading data, information, opinion or statement.

6. Whilst every effort is made by the editorial board and the publishers to ensure that drug doses and other quantities are presented accurately, readers are advised that new methods and techniques involving drug usage as described in this journal, should only be followed in conjunction with the drug manufacturer’s own published literature in their own country.

Table of Content

<table>
<thead>
<tr>
<th>Manuscript Title</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEADFCON 2017</td>
<td>1-2</td>
</tr>
<tr>
<td>“Quality diabetes care beyond socio cultural barriers”</td>
<td></td>
</tr>
<tr>
<td>Maskey R., Gupta PP., Kettel V.</td>
<td></td>
</tr>
<tr>
<td>Insulin Prescription Pattern among Type 2 DM patients visiting Outpatient Department at a Tertiary Hospital in Kathmandu, Nepal</td>
<td>3-7</td>
</tr>
<tr>
<td>Hari Kumar Shrestha, R Tamrakar, Ashish Shrestha, SR Amatya</td>
<td></td>
</tr>
<tr>
<td>Cognitive Effect of Standardized group education programme in Diabetic population</td>
<td>8-11</td>
</tr>
<tr>
<td>Ravi Kant, Meenakshi Khapre, Amninder Singh</td>
<td></td>
</tr>
<tr>
<td>Awareness of Symptoms and Early Management of Hypoglycemia among Patients with Diabetes Mellitus</td>
<td>12-17</td>
</tr>
<tr>
<td>Suresh K. Sharma, Ravi Kant</td>
<td></td>
</tr>
<tr>
<td>Response to Cabergoline treatment in Invasive Prolactinoma with hemorrhage- A case report</td>
<td>18-20</td>
</tr>
<tr>
<td>Vivek Pant, Suman Baral, Binod Aryal, Arjun Tumbapo</td>
<td></td>
</tr>
<tr>
<td>About the Journal</td>
<td>21-24</td>
</tr>
</tbody>
</table>
Diabetes is emerging as a major global problem worldwide and is reaching epidemic proportions with global prevalence of 8.3%, affecting 387 million adults and costing 612 billion dollars in health care spending in 2014. The IDF estimates that the prevalence of DMT2 in Nepal was 4.5% in 2012 and the predicted number of undiagnosed cases in adults was 294 per 1000 population. Relative to neighbouring countries such as Pakistan, Sri Lanka, and Bangladesh, Nepal has a higher prevalence of DMT2 and impaired glucose tolerance.

Diabetes is a particular problem in the South Asian community, as people from this ethnic origin are four times more likely to develop the condition than other groups. South Asian people with type 2 diabetes also have a greater risk of developing cardiovascular disease and renal problems, and a higher diabetes-related mortality rate is seen among this group than in the general population.

Diabetes especially type 2 diabetes is an emerging major health care problem in Nepal, with rising prevalence and its complications especially in urban populations. Several challenges in diabetes management were identified, including high cost of treatment, limited health care facilities, and lack of disease awareness among patients.

The economic burden of diabetes is enormous. Diabetes is costly because of its chronic nature, the severity of its complications, and the modalities required to control them. Consequently, people have frequent and intensive encounters with the health system such as higher use of hospital inpatient care, outpatient visits, emergency visits, and prescription drugs. Moreover, the out-of-pocket expenses associated with diabetes remain a barrier to the prevention of diabetes-related complications in Nepal.

Culture is a shared and dynamic phenomenon displayed by the behaviours and attitudes of a social group, which remains difficult to interpret, but requires a good understanding by health workers. It encompasses beliefs, language, social norms and values, including practices which can create a sense of social support and belonging for individuals who share the same core beliefs. These can both facilitate and impede health coping styles, access to and utilisation of healthcare services, and implementation of professional advice.

Prevention or delay of diabetes in this population would improve quality of life and reduce health care costs. Identifying cultural definitions of health and diabetes is critically important to developing effective diabetes prevention programs.

We conclude that a comprehensive national effort is needed to stem the tide of the growing burden of diabetes mellitus type 2 and its complications in Nepal. The government should develop a comprehensive plan to tackle diabetes and other non-communicable diseases supported by appropriate health infrastructure and funding.
Insulin Prescription Pattern among Type 2 DM patients visiting Outpatient Department at a Tertiary Hospital in Kathmandu, Nepal

Hari Kumar Shrestha, R Tamrakar, Ashish Shrestha, SR Amatya
kathmandu University Medical Sciences, kathmandu, Nepal

Abstract

Background: Management of Type 2 Diabetes Mellitus includes non-pharmacological and pharmacological interventions of which insulin remains one of the most effective methods for achieving glycemic control, either alone or in combination with oral anti-diabetic medications. Effective usage of insulin in the management of glycaemia remains a challenge in developing countries like Nepal. To best of our knowledge, there is not any study regarding insulin prescription pattern on Type 2 Diabetes Mellitus patients using insulin from Nepal, so we studied the prescription pattern of insulin on insulin using Type 2 Diabetes Mellitus patients.

Methods: Patients aged 30 years or above who present in Dhulikhel Hospital outpatient clinic during the period from January 2015 to June 2015 with diagnosis of Type 2 Diabetes Mellitus diagnosed at least for 6 months and were taking injection insulin at least since last 3 months were enrolled in this cross sectional, observational study.

Results: Forty-five study participants had a mean age of 56.6 ±10.95 year, body mass index of 23.97 ±4.7 kg/m2, Diabetic duration of 10.33 ±6.41 years and HbA1c of 8.53 ±1.53. Fifty-three percent were female and almost all study participants (96%) were taking Oral Antidiabetic Drugs along with Insulin. Sixty-three percent of participants were using Premix insulin whereas 33% were using basal insulin alone. Mean Insulin dose was 28.96 ±11.75 units per day. Among them, 80% were “self” injecting insulin and 53% were using Glucometer.

Conclusion: Our data showed that premixed insulin being most commonly used insulin. All patients used Insulin Pen as delivery device and larger proportions of them were self injecting insulin. All patients felt mild hypoglycemia which can be improved by increased utilization of glucometer.

Keywords: hypoglycemia; insulin; T2DM

INTRODUCTION

Diabetes Mellitus (DM) is a metabolic disorder characterized by prolonged hyperglycemia due to inadequate insulin secretion or defective insulin action or both. It is estimated that, more than 70% of people with diabetes will reside in developing countries by 2030.1 Achieving good glycemic control has important role in reducing the burden of disease attributable to diabetes mellitus.2

Management of DM includes non-pharmacological and pharmacological interventions of which insulin remains one of the most effective methods for achieving glycemic control, either alone or in combination with oral anti-diabetic medications.3,4,5 According to recent estimates, nearly 40% patients with T2DM in India and Gulf countries are using insulin alone or in combination with OADs at any given point of time.6, 7 There is one study on prescription pattern in DM patients attending outpatient clinic of a tertiary hospital from Nepal documenting 15% were using insulin.8 Effective usage of insulin in the management of glycaemia remains a challenge in developing countries like Nepal. Proper insulin administration can also prevent...
RESULTS
In this cross-sectional study, 150 diabetic patients were enrolled. The mean age of the patient was 56.6 years (SD: 10.95). Fifty-three percent of the patients were female. The mean Diabetes duration was found to be 10.33 years (SD: 6.41). The mean HbA1c was 8.53% (SD: 1.53). Variables are tabulated on Table 1.

Table 1. Clinical parameters of study participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>n; Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age [years]</td>
<td>56.6 ± 10.95</td>
</tr>
<tr>
<td>DM Duration [years]</td>
<td>10.33 ± 6.41</td>
</tr>
<tr>
<td>BMI [kg/m²]</td>
<td>23.97 ± 4.72</td>
</tr>
<tr>
<td>FBS [mg/dl]</td>
<td>137.88 ± 49.56</td>
</tr>
<tr>
<td>HbA1C (%)</td>
<td>8.53 ± 1.53</td>
</tr>
</tbody>
</table>

DISCUSSION
The mean age and diabetes duration were similar to the baseline data from other studies.10-12 One being a multinational prospective observational study (MOSAIC) addressing similar issues among T2DM patients on insulin with or without OADs.11 In our study, 53% of participants are female, similar with Chinese cohort of MOSAIC but higher comparing to Indian cohort, which could be due to referral bias. Education status of our patients is also comparable to other studies comparing to Indian and Gulf countries showing 8.9 ± 2.1 % in India and 8.3 ± 2.0 % in Gulf countries.13, 14

Eighty percent of our study participants were using insulin alone with OAD. This similar with Indian and Saudi Arabian cohort of MOSAIC.11 Other studies,15 showing higher rate of sole insulin usages. Higher usages of OADs along with insulin in our study may be acknowledging the pathophysiology of T2DM as proposed by Ralph A Defronzo.16

Table 2. Treatment characteristics of insulin treated T2DM patients.

<table>
<thead>
<tr>
<th>Variables</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication regimen</td>
<td></td>
</tr>
<tr>
<td>Insulin alone</td>
<td>9 (20)</td>
</tr>
<tr>
<td>Insulin and OAD</td>
<td>36 (80)</td>
</tr>
<tr>
<td>Insulin Pen as insulin delivery device</td>
<td>Yes 45 (100) No 0 (0)</td>
</tr>
<tr>
<td>Self Insulin Injection</td>
<td>Yes 36 (80) No 9 (20)</td>
</tr>
<tr>
<td>Using Glucometer</td>
<td>Yes 24 (53.3) No 21 (46.7)</td>
</tr>
<tr>
<td>Self-Reported Hypoglycemia symptoms</td>
<td>Yes 45 (100) No 0 (0)</td>
</tr>
</tbody>
</table>

Table 2. Treatment characteristics of insulin treated T2DM patients.

<table>
<thead>
<tr>
<th>Variables</th>
<th>n; Median ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin Duration (months)</td>
<td>28.96 ± 11.75</td>
</tr>
<tr>
<td>Insulin (unit/day)</td>
<td>28.96 ± 11.75</td>
</tr>
</tbody>
</table>

Figure 1: Bar diagram showing % of patients according to age distribution

Figure 2: Bar diagram showing percentage of patients according to Diabetic Duration distribution

Figure 3: Bar diagram showing percentage of insulin prescription regimen

Figure 4: Bar diagram showing percentage of insulin prescription based on its type
Nearly 2/3rd of our patient were prescribed premix insulin (human or analog), aligning with evidences from previous real world data, epidemiological surveys, and consensus statements of key opinion leaders. 10, 13, 17, 18

Our patients were prescribed slightly higher analog insulin similar with Indian studies documenting 10 years audit of insulin injection practices. 10 In our study, 46.7% used only human insulin, 33.3% used only analog insulin and 20% used both regular and analogue insulin. The comparative figures for human versus analog were 71% versus 32% in the DiabCare India study, 13 68.3% versus 31.7% in the Japanese GP study 19 and 26% versus 83% in DiabCare Gulf study. 14 Such variations of choice may have been influenced by many factors, among them socioeconomic conditions, affordability, availability being main player.

TDD of insulin (U/day) was 28.9 ± 11.75 in our study, which was similar to Indian audit of Insulin Injection Practices 10 and DiabCare India survey 13 which reported 33.0 ± 18.34 and 32.1 ± 17.0 respectively, while the DiabCare Gulf study 14 used higher mean daily dose (U/day) of 57.5 ± 30.4, their Japanese GP study 19 reported relatively lower dose of 25.8 ± 22.9 U/day. Such finding may indicate racial variations in daily requirement of insulin in addition to a different pattern of practice amongst practitioners of a particular country or region.

In our study, all patients used insulin pen device, in accordance with Chinese [100%], and Germany (95%) cohort of MOSAiC study 11. In Indian audit of Insulin Injection Practices 10 pen device was used by 66.08% of the patients, whereas 31.7% patients used insulin syringes, and 2.15% were using both insulin pen as well as syringes. Similarly, in DiabCare India study 65.6% used pens, 32.0% used syringes. 13 Data from a recent large worldwide survey indicated that insulin pen alone was used by 85.6% of patients, while 9.6% used a syringe alone, 2.8% used both, and 1.4% used a pen and another device (usually an insulin pump). 20 Thus, it seems economic condition is an important, but not the sole factor responsible for, physicians or patients choice. 21 It may be partly in using modern devices during insulin therapy also may have important role. In this study, 80% were self injecting insulin, similar with Nigerian Study. 12

The American Diabetic Association (ADA) has recommended SMBG using glucometer in all diabetic patients on insulin. 13 However, almost half of our study patients did not have access to glucometer despite being on insulin therapy. Other studies from developing countries like India 10 reported that one third of patients were not using glucometer, while Nigerian 12 and Pakistani study 21 reported 56% and 59% of Type 2 Diabetic patients were utilizing glucometer respectively.

In this study, all patients reported mild form of hypoglycemia, similar with an Indian study conducted amongst patients using glugucometer. 22 Patients where 96% reported hypoglycemic symptoms. 22 A met analysis involving 332,542 People with Type 2 Diabetes on Oral Therapies and insulin reported that prevalence of mild/moderate hypoglycemia was 50% 23 whereas Nigerian study 12 reported it among 65% patients. In our study, 7.6% of participants reported hypoglycemia in Indian audit of insulin Injection Practices. 10

CONCLUSIONS

Our data showed that premixed insulin being most commonly used insulin. All patients used Insulin Pen as delivery device and larger proportions of them were self injecting insulin. All patients felt mild hypoglycemia which can be improved by increased utilization of glucometer.

The one limitation of this study is that the sample size was small and it was study done in single hospital setting.

ACKNOWLEDGEMENT

I would like to thank everyone involved in this study including patients and my colleague.

CONFLICT OF INTEREST

The Author disclosed that there is no conflict of interest in publishing this research paper.

References

4.    AACE/ACE Comprehensive Diabetes Management Algorithm, Endocr Pract. 2015;21(No. 4).
Cognitive Effect of Standardized group education programme in Diabetic population

Ravi Kant1, Meenakshi Khapre2, Aminder Singh3

1Associate Professor, Department of General Medicine, All India Institute of Medical Sciences, Rishikesh, 2Assistant Professor, Department of Community and Family Medicine, All India Institute of Medical Sciences, Rishikesh, 3MBBS Intern, All India Institute of Medical Sciences, Rishikesh

Abstract

Background: The prevalence of diabetes in India has reached alarming levels with 8.7% of population affected as of 2015, which is expected to double in the future. The reasons for the rapid increase in prevalence of diabetes include genetic predilection of Indian population, economic boom, sedentary lifestyle, inadequate follow up and lack of disease awareness. The aim of the study was to overcome the self care deficit which would help patients to be more compliant and better in managing their illness.

Methods: The study was conducted at weekly diabetes clinic at AIIMS, Rishikesh in which 200 patients participated. Two sessions, each of 60 minutes were conducted fortnightly. The patients were educated by trained personnel using specially designed module in patients’ own language. Each group consisted of 10-15 participants. Participants were tested at the beginning and after the educational programme using a 10 item questionnaire. Data was analysed using MS Excel 2010. Paired t test was used to find any significant difference between pre and post test score.

Results: A significant improvement in test scores after education session was noted. Average learning gain was 77.98 % ± 23.27 % after the group education. Sixty four percent participants demonstrated more than 75% learning gain. Conclusion: A dedicated group session programme implemented in an environment conducive to learning with specially designed module has a significant impact on patients’ knowledge (64% participants demonstrated more than 75% learning gain) about the cause and treatment of their disease. The study can be extended to see if it impacts behaviour by tracing changes in glycaemic control.

Keywords: cognitive; diabetes; education

INTRODUCTION

Indian diabetes federation had mentioned 69.1 million cases of diabetes in India in 2015 with prevalence of 8.7% that will be doubling in near future. Indian healthcare professionals and patients in India face a number of challenges such as clinical inertia in achieving glycaemic control, inadequate follow-up and lack of disease awareness.1,2

Orem theory of self-care is framework for integration of self-care concept into patient education and adherence. Self-care is behaviour from life situation that person directs to themselves or their environment to regulate factors affecting their own development, health or wellbeing. It is a learnt and goal oriented behaviour. Self-care deficit exists when self-care demand is not met for which patient education is the solution. The American Diabetes Association recommends assessment of self-management skills and knowledge of diabetes at least annually, and the provision or encouragement of continuing diabetes education.3

This study is done to overcome the self care deficit which would help patients to be more compliant and better in managing their illness.

METHODS

This study was conducted in weekly diabetes clinic of All India Institute of Medical Sciences, Rishikesh. Type 2 diabetes patients of Rishikesh, regardless of how long they had been living with diabetes, with low functional health literacy, attending the diabetes OPD were included in the study. The Ethical approval was given by the Institutional Ethics Committee. Two hundred patients were recruited after obtaining their consent. Participants were pre-informed of their sessions either by phone or message. Two sessions were conducted fortnightly. Each group consisted of 10-15 participants excluding the support i.e. family members. Each session was conducted for a period of 60 min followed by discussion, recall, comprehension and feedback thereby completing the communication loop. Trained junior resident and health worker facilitated the sessions. Module was prepared by expert faculties in diabetes and tailored to the needs of the patients in Hindi language. Interactive sessions in the form of videos, Power Points and problem solving were held. The topics included were as given by National Standards for DSMEs.

• Describing the diabetes disease process and treatment options
• Incorporating nutritional management into lifestyle
• Incorporating physical activity into lifestyle
• Using medication(s) safely and for maximum therapeutic effectiveness
• Monitoring blood glucose and other parameters and interpreting and using the results for self-management decision making
• Preventing and delaying complications
• Developing personal strategies to address psychosocial issues and concerns

They were given some task on basis of topic taught to transfer the knowledge in everyday life which was reviewed in next session. Details were motivated to attend next sessions. Disease knowledge test was used to evaluate basic knowledge about diabetes. Participants were tested at the beginning and after the educational program. A 10-item questionnaire was used to assess diabetes-related knowledge and self-care practices, each answer scoring one point, up to a maximum of 10. Data was analysed using MS Excel 2010. Paired t test was used to find any significant difference between pre and post test score. Average learning gain was computed by Pre − post / 10- pre X100.

RESULTS

In this study there were 93 (46.5%) female participants and 107 (53.5%) males. Maximum females were between 40-50 years (34.4%), Maximum males were in age group of 60-70 years (42.99%). Overall 36 % were in age group of 60-70 years followed by 40-50 years (24.5%) and 50-60 years (21.5 %) (Table 1).

Table 1. Age and sex distribution of participants

<table>
<thead>
<tr>
<th>Age</th>
<th>sex</th>
<th>F</th>
<th>M</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>1</td>
<td>1.00%</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>30-40</td>
<td>12</td>
<td>12.00%</td>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>40-50</td>
<td>32</td>
<td>32.40%</td>
<td>17</td>
<td>49</td>
</tr>
<tr>
<td>50-60</td>
<td>19</td>
<td>20.40%</td>
<td>24</td>
<td>43</td>
</tr>
<tr>
<td>60-70</td>
<td>26</td>
<td>27.90%</td>
<td>46</td>
<td>72</td>
</tr>
<tr>
<td>70-80</td>
<td>3</td>
<td>3.00%</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>&gt;80</td>
<td>0</td>
<td>0.00%</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>97.88%</td>
<td>107</td>
<td>200</td>
</tr>
</tbody>
</table>

8. Average learning gain was 77.98 ± 21.27 % after the group education (Table 2).

Table 2. Changes in Pre-test and post-test score after Standardized group education

<table>
<thead>
<tr>
<th>Score</th>
<th>Pre test score</th>
<th>Post test score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>75 (36.5)</td>
<td>42 (21.0)</td>
</tr>
<tr>
<td>5-8</td>
<td>112 (56.3)</td>
<td>62 (31.0)</td>
</tr>
<tr>
<td>&gt;8</td>
<td>15 (7.5)</td>
<td>134 (67.0)</td>
</tr>
<tr>
<td>Total</td>
<td>200 (100)</td>
<td>200 (100)</td>
</tr>
</tbody>
</table>

Mean 5.29 8.79
SD 2.111 1.448
Paired t test 31.27 P = 0.0001
There was no sex wise difference in learning gain among participants (Table 3). Sixty four percent of participants demonstrated more than 75% of learning gain. While geriatric participants demonstrated significantly lesser learning gain compared to their middle aged and younger participants. (Table 4) Table 3. Sex-wise distribution of average learning gain

<table>
<thead>
<tr>
<th>Average Learning gain</th>
<th>Sex</th>
<th>Total</th>
<th>[X^2]</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50%</td>
<td>Female</td>
<td>20 (21.5%)</td>
<td>12 (11.2%)</td>
<td>32 (16%)</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>18 (19.3%)</td>
<td>22 (20.5%)</td>
<td>40 (20%)</td>
</tr>
<tr>
<td>50 – 75%</td>
<td></td>
<td>55 (59.13%)</td>
<td>73 (68.22%)</td>
<td>128 (64%)</td>
</tr>
<tr>
<td>&gt; 75%</td>
<td></td>
<td>93 (100%)</td>
<td>107 (100%)</td>
<td>200 (100%)</td>
</tr>
</tbody>
</table>

DISCUSSION

Group education programme for diabetes was found to be effective in many studies1-10. Also the challenges faced by diabetes patients are akin to each other. Therefore, this standardized group educational programme was planned. Keeping in mind about feasibility of patient to return back for sessions, only two sessions totalling 2-hours in duration at interval of 15 days were planned.

Studies11-13 have proven the effectiveness of patient education programme by improvement in their knowledge on the disease, glycaemic control and BMI. Changes in BMI, glycaemic control needs around 6 months to exhibit, so only change in knowledge score is unveiled in this study, long term benefit study is going on. In this study we found significant improvement in knowledge score of patient after the group education sessions. Improvement in learning for all participants was outstanding.

No difference in average learning gain was found in sexes. Older Age was found to be a significant factor that affects the learning process. We therefore also invited one care giver in these sessions as support system helps in achieving better compliance and transfer of knowledge. Improvement in pre and post test score was more in those who scored less in pre-test and vice versa corresponding to results of other study14. Patients felt free to ask question and express opinion regarding their socio-cultural and psychological issues. Sharing each other’s experiences on coping with the diabetes was appreciated by participants as it gave them a platform to discuss their psychosocial problems. Also, the programme helped them to have an open dialogue with health care providers.

With the growing burden of diabetes and out of pocket expenditure to individual, achieving the therapeutic goal and preventing the complications is of utmost importance. Diabetes education plays an important role in management of diabetes. This group education programme was found to be feasible, effective and acceptable to patients. This group education programme can be implemented on routine basis for all diabetic patients and one refresher session of one hour per year.

CONCLUSIONS

A dedicated group session programme implemented in an environment conducive to learning with specially designed module has a significant impact on patients’ knowledge (64% participants demonstrated more than 75% learning gain) about the cause and treatment of their disease. The study can be extended to see if it impacts behaviour by tracing changes in glycaemic control.

CONFLICT OF INTEREST

There are no conflicts of interest with any of the authors.

REFERENCES

Awareness of Symptoms and Early Management of Hypoglycemia among Patients with Diabetes Mellitus

Suresh K. Sharma1, Ravi Kant2
1College of Nursing, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, 2Department of General Medicine, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

Abstract

Background: Hypoglycemia mostly occurs in diabetic patients on medications. Lack of awareness on hypoglycemic symptoms among patients may delay its identification and treatment. The symptoms of hypoglycemic symptoms among patients may delay its identification and treatment. Neglecting the symptoms of hypoglycemia and delaying treatment could cause poorer outcomes or morbidity. The present study was aimed to assess the awareness of symptoms of hypoglycemia and knowledge in early management of hypoglycemia among patients with diabetes.

Methods: A Cross sectional study was done among 500 diabetes mellitus patients attending the outpatient department of AIIMS, Rishikesh, Uttarakhand in 2017. Patient with diabetes for over five years and who were on insulin treatment were included in the study. After obtaining an informed consent, knowledge on the symptoms and early treatment of hypoglycemia were collected. The data were analyzed by frequency and percentage.

Results: The study included 500 diabetic patients, of which 55.5% were females. The common symptoms of hypoglycemia known to the study subjects were dizziness (84.4%), weakness (74.1%), and drowsiness (68.1%). Overall, 322 (64.4%) diabetic patients had good knowledge on hypoglycemia (knowledge of at least three symptoms of hypoglycemia together with at least one precipitating factor and at least one remedial measure). Regardless of management of hypoglycemia, 49% patients preferred taking glucose powder or sugar with water as an immediate measure. Higher age, illiteracy, low socioeconomic status was associated with poor knowledge whereas treatment with insulin along with oral hypoglycemic agents was associated with good knowledge on hypoglycemia.

Conclusion: Although the knowledge on the symptoms, remedial measures, and prevention of hypoglycemic episodes was good among the type 2 diabetic patients in the study, there were gap in knowledge on important aspects like precipitating factors, target levels etc., which need to be addressed by health care workers through regular educational programs.

Keywords: Diabetes mellitus, hypoglycemia, awareness, management, insulin.

Background: The symptoms of hypoglycemia may be nonspecific with intensity decreasing with increasing age. Thus, it is very important that the subjects are able to recognize and identify the symptom onset at an early stage in order to manage the episode effectively and take steps to prevent the recurrence. Neglecting the symptoms of hypoglycemia and delaying treatment could cause poorer outcomes or morbidity. Large trials (action on control cardiovascular risk in diabetes. Veterans affairs diabetes trial) have shown that there were was a higher mortality in the group that had hypoglycemia (intensively treated arm). Hence, the American Diabetes Association (ADA) guidelines emphasize on individualizing targets and reducing risk of hypoglycemia in patients with long duration of diabetes and comorbidities. In a survey conducted by the American Association of Clinical Endocrinology emphasize that there was a knowledge gap which must be addressed.

In this background, the knowledge and awareness about the varied presentations of hypoglycemia and the possible early management strategies for the same would go a long way in patients with diabetes management. There is a need for shared responsibility in the prevention of hypoglycemia. We proposed to study the knowledge about hypoglycemia and its early management among diabetes patients attending AIIMS, Rishikesh.

Methods: This cross sectional study study was done among purposively selected 500 diabetes mellitus patients for over five years and who were on insulin treatment attending the Diabetic Clinic of All India Institute of Medical Sciences (AIIMS), Rishikesh, Uttarakhand. Study was conducted during June 2016 to July, 2017. Patients with diabetes mellitus-I, DM-II patients receiving only oral hypoglycemic drugs, pregnant women with gestational diabetes mellitus, diabetes secondary to other systemic diseases were excluded from the study. This study was approved by Institute Ethical Committee and after obtaining an informed written consent, patients were subjected to a semi-structured interview to assess the knowledge on the symptoms and early treatment of hypoglycemia along with base line data about the patient and disease existence.

Results: The study included 500 diabetic patients, more than half of the patients (55.5%) of the study subjects were females. The mean age (standard deviation [SD]) of the study participants was 59.6 [59.7] years and the age ranged from 29 to 85 years. Majority of the patients (81%) were more than 50 years of age and were belonging to middle socioeconomic class (80%). The mean (SD) duration of diabetes was 10.9 (5.9) years with a duration ranging from 6 to 40 years (Table 1).

Table 1: Background characteristics of patients with Diabetes Mellitus N=500

<table>
<thead>
<tr>
<th>Back Ground Characteristics</th>
<th>1 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in Years</td>
<td></td>
</tr>
<tr>
<td>1. Up to 50</td>
<td>95 (19)</td>
</tr>
<tr>
<td>2. 51-60</td>
<td>200 (40)</td>
</tr>
<tr>
<td>3. &gt; 60</td>
<td>205 (41)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>1. Male</td>
<td>223 (44.5)</td>
</tr>
<tr>
<td>2. Female</td>
<td>277 (55.5)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>1. Illiterate</td>
<td>280 (56)</td>
</tr>
<tr>
<td>2. Literate</td>
<td>220 (44)</td>
</tr>
<tr>
<td>Monthly Income</td>
<td></td>
</tr>
<tr>
<td>1. Rs. 5000/-</td>
<td>66 (13)</td>
</tr>
<tr>
<td>2. Rs. 10,000/-</td>
<td>34 (7)</td>
</tr>
<tr>
<td>3. Rs. 10,001- 15,000/-</td>
<td>251 (50)</td>
</tr>
<tr>
<td>4. Rs. 15,001- 20,000/-</td>
<td>115 (23)</td>
</tr>
<tr>
<td>5. Rs. 20,001/-</td>
<td>34 (7)</td>
</tr>
<tr>
<td>Duration of Diabetes Mellitus</td>
<td></td>
</tr>
<tr>
<td>1. &lt; 5 years</td>
<td>76 (15)</td>
</tr>
<tr>
<td>2. 5 – 10 years</td>
<td>230 (46)</td>
</tr>
<tr>
<td>3. &gt; 10 years</td>
<td>194 (39)</td>
</tr>
</tbody>
</table>

Corresponding Author:
Dr. Suresh K. Sharma, RN, MScN, PhD., Professor & Principal, College of Nursing, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India Email: skaiims17@gmail.com, 08475000293
Awareness of Symptoms and Early Management of Hypoglycemia
Sharma et al.
Jour of Diab and Endo Assoc of Nepal 2017; 1(1): 11-16

Table 2: Knowledge of symptoms of hypoglycemia among Diabetic patients N=500

<table>
<thead>
<tr>
<th>Symptoms *</th>
<th>f (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fainting</td>
<td>472 (94.4)</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>341 (68.1)</td>
</tr>
<tr>
<td>Excessive hunger</td>
<td>355 (71)</td>
</tr>
<tr>
<td>Sweating</td>
<td>25 (4.9)</td>
</tr>
<tr>
<td>Seizures</td>
<td>14 (2.7)</td>
</tr>
<tr>
<td>Head ache</td>
<td>96 (19.2)</td>
</tr>
<tr>
<td>Weakness</td>
<td>345 (69.3)</td>
</tr>
<tr>
<td>Loss of conscious ness</td>
<td>195 (39)</td>
</tr>
<tr>
<td>Confusion</td>
<td>175 (35)</td>
</tr>
<tr>
<td>Shaking</td>
<td>163 (32.6)</td>
</tr>
</tbody>
</table>

*Multiple responses allowed

More than two-thirds (68.6%) of the patients knew that hypoglycemia may be precipitated by missing or delaying of meals, exertion as a precipitating factor was known to 35.2% of patients (Table 3). At least one precipitating factor was known to 389 (77.8%) patients and remedial measure, anyone, to be taken during an episode was known to 451 (90.2%) patients. Half of the patients (49.7%) did not know even one symptom of hypoglycemia. 

Table 3: Knowledge of precipitating factors of hypoglycemia and its remedial and preventive measures among Diabetic patients N=500

<table>
<thead>
<tr>
<th>Factors &amp; Measures</th>
<th>f (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precipitating Factors</td>
<td></td>
</tr>
<tr>
<td>1. Missing or delayed food</td>
<td>343 (68.6)</td>
</tr>
<tr>
<td>2. Exertion</td>
<td>176 (35.2)</td>
</tr>
<tr>
<td>3. Wrong dosage</td>
<td>140 (28)</td>
</tr>
<tr>
<td>4. Alcohol intake</td>
<td>60 (12)</td>
</tr>
<tr>
<td>Complication of Hypoglycemia</td>
<td></td>
</tr>
<tr>
<td>1. Paradoxical attack</td>
<td>188 (37)</td>
</tr>
<tr>
<td>2. Head attack</td>
<td>180 (36)</td>
</tr>
<tr>
<td>3. Coma</td>
<td>175 (35)</td>
</tr>
<tr>
<td>4. Death</td>
<td>165 (33)</td>
</tr>
<tr>
<td>Remedial measures during Hypoglycemia</td>
<td></td>
</tr>
<tr>
<td>1. Glucose powder or sugar</td>
<td>245 (49)</td>
</tr>
<tr>
<td>2. Go to casualty or emergency department</td>
<td>325 (65)</td>
</tr>
<tr>
<td>3. Eat food</td>
<td>300 (60)</td>
</tr>
<tr>
<td>4. Drink sugar syrup</td>
<td></td>
</tr>
<tr>
<td>Preventive measures</td>
<td></td>
</tr>
<tr>
<td>1. Take timely meal</td>
<td>440 (92)</td>
</tr>
<tr>
<td>2. Take medication as advised</td>
<td>430 (86)</td>
</tr>
<tr>
<td>3. Report to doctor</td>
<td>240 (48)</td>
</tr>
<tr>
<td>4. Adjust the medications</td>
<td></td>
</tr>
<tr>
<td>5. Self-monitoring blood sugar</td>
<td>370 (74)</td>
</tr>
</tbody>
</table>

*Multiple responses allowed

Regarding management of hypoglycemia, 49% patients preferred taking glucose powder or sugar with water as an immediate measure. Majority of patients (65%) felt going to the casualty or emergency department was the right option for hypoglycemia. Eating food which is either missed or delayed as a measure to be taken during an episode of hypoglycemia was known to >40% of the study population.

Upon questioning their knowledge on prevention of further attacks, most of the patients (92%) mentioned “taking timely meals” as a measure and 87% to take medications as per prescriptions of the doctor. Only a fifth of the patients were aware of “self-monitoring of blood glucose (SMBG) by glucometers” as a means to prevent further attacks as this will help them to identify hypoglycemia at an early stage, correlate with symptoms and take preventive measures (Table 3).

Thus, overall 331 (66.2%) diabetic patients had knowledge of at least three symptoms of hypoglycemia together with at least one precipitating factor and at least one remedial action and therefore were considered to have good knowledge on hypoglycemia. Higher age, illiteracy, low socioeconomic status was associated with poor knowledge whereas treatment with insulin along with oral hypoglycemic agents was associated with good knowledge on hypoglycemia. Sex and duration of disease were not associated with knowledge on hypoglycemia.

More than 50% of the patients attributed their knowledge of hypoglycemia to the doctor who treated them. A little lesser proportion (42.6%) attributed their knowledge to their friends and relatives. A quarter learnt about hypoglycemia from the fellow patients who got treatment from the OP clinic (Figure 1).

Figure 1: Source of knowledge on hypoglycemia among Diabetic Patients

Discussion
The study included 500 diabetic patients, more than half of the patients (55.5%) of the study subjects were females. The mean age (SD) of the study participants was 59.6 (±9.7) years and the age ranged from 29 to 85 years. Majority of the patients (81%) were more than 50 years of age and were belonging to middle socioeconomic class (80%). The mean duration of diabetes was 10.9 (5.9) years with a duration ranging from 6 to 40 years. Higher age, illiteracy, and low socioeconomic status were associated with poor knowledge whereas treatment with insulin along with OHAS was associated with good knowledge on hypoglycemia. Sex and duration of disease were not associated with knowledge on hypoglycemia.

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetics. According to Wild et al the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India.
OHA’s in the age group of 40 to 65 years experienced hypoglycemic symptoms. None of these patients required hospitalization as they were aware of the immediate management of hypoglycemia as they received good diabetic education. Ya-Chun et al studied 1195 patients with type 2 DM and observed 7.4% to have experienced severe hypoglycemia. Patients on insulin experienced hypoglycemia more frequently (17.8%) as compared to patients on OHA's (4.3%). The risk factors for developing severe hypoglycemia were older age, lower literacy level and insulin therapy. Zammitt NN and Frier BM observed an increased risk of hypoglycemia among older adults and those with diabetes for many years.

The immediate treatment of hypoglycemia should be known by all the diabetic patients, so that need for hospitalization could be avoided. Illiterate patients and elderly patients with dementia must be more educated about hypoglycemia. Thus improving patient skills self-management, self-monitoring of sugar and adjustments of dose based on requirements can reduce the risk of hypoglycemia. Severe hypoglycemia is usually associated with increased mortality, impaired cognitive function and affects patient’s quality of life. Frequent hypoglycemic spells can burden the existing healthcare facilities and productivity at workplace can be affected.

This study emphasizes the role of health care workers-doctors, nurses, diabetes educators, lab technicians in providing health education to the patients during every visit. They must educate on target levels, importance of SMBG, symptoms of hypoglycemia, the ways of preventing it and immediate remedial measures to be adopted during every visit. Furthermore, periodical educational reinforcement programs need to be conducted for all diabetic patients which must include topics on hypoglycemia.

This is one of the few studies in India to study exclusively about the knowledge on hypoglycemia in detail among the type 2 diabetic patients. In India, which has the second largest number of diabetes patients, there is negligible data on the epidemiology of hypoglycemia. The limitation of the study is that the knowledge is assessed among patients attending a diabetes free Clinic in a tertiary care hospital and may not be accurately representing that in a community comprising both affordable and poor patients.

Conclusions

Although the knowledge on the symptoms, remedial measures, and prevention of hypoglycemic episodes was good among the type 2 diabetic patients in the study, there were gap in knowledge on important aspects like precipitating factors, target levels etc., which need to be addressed by health care workers through regular educational programs.

References:

13. Al-Adsani AM, Moussa MA, Al-Jasem Li, Abdella
Case Report

Response to Cabergoline treatment in Invasive Prolactinoma with hemorrhage - A case report

Vivek Pant1, Suman Baral2, Binod Aryal1, Arjun Tumbapok2
1Department of Biochemistry, Institute of Medicine, Maharajgunj, Kathmandu, 2Endocrinology Unit, Institute of Medicine, Maharajgunj, Kathmandu

Abstract

Patients with invasive prolactinoma present with constellation of symptoms including headache, blurred vision, lethargy, menstrual irregularity and sexual dysfunction. Cabergoline, a potent dopamine agonist, is a known medication prescribed for the treatment of prolactinoma. Here, we report a case of invasive macroprolactinoma with hemorrhage in a 18 years female with dramatic response to cabergoline treatment clinically, biochemically, and radiologically.

Keywords : cabergoline; prolacti; prolactinoma

INTRODUCTION

Pituitary adenomas are benign tumors of the pituitary gland, with lactotroph cell adenoma (prolactinoma) being the commonest, accounting for 44% of known cases.1 Microprolactinomas are less than 1 cm in diameter whereas macroadenomas measures more than 1 cm.1 Invasive giant macroadenoma are defined as tumor size above 4 cm and serum prolactin more than 1000 ng/mL with clinical symptoms of hyperprolactinemia or mass effect. Prolactinomas come to attention because of the effect of the elevated prolactin on the reproductive system and/or due to the compression effect of the tumor.

Dopamine agonists reduce the size of prolactinomas by inducing a reduction in cell volume via inhibition of secretory mechanism as well as causing perivascular fibrosis and cell necrosis.2 It has been demonstrated that cabergoline is safe and effective for treatment of invasive giant prolactinomas, even when administered in relatively high doses for longer duration. In this case, we describe the case of a 18 years Nepalese female diagnosed with macroprolactinoma with hemorrhage and its dramatic response to dopamine agonist (cabergoline).

CASE REPORT

Eighteen years old female from kathmandu presented to the endocrinology OPD of Tribhuvan university teaching hospital on 26th January 2016 with complaints of headache and decreased bilateral vision for 3 months. She also had generalized fatigability, lethargy and menstrual irregularities for 2 years. She also reported history of galactorrhea on and off. There is no history of hearing loss, abnormal movements of body or altered level of consciousness. Family history was unremarkable.

On physical examination, patient was conscious. Vital signs were stable. Thyroid examination was normal. Perimetry examination showed bilateral superior quadrantanopia with full range of extra ocular muscle movements. Systemic examination was unremarkable. Laboratory investigations showed hyperprolactinemia. Initially, serum prolactin was >320 ng/mL. Then after 200 times dilution serum prolactin value was 49,680 ng/mL (normal value = 3-18.6 ng/mL). Other pituitary work-up was normal. Serum cortisol at 8 a.m and overnight dexamethasone suppression test were within normal range. There was no finding suggestive of hypogonadism, hypothyroidism, and adrenal insufficiency. Plain Magnetic resonance imaging (MRI) of head was done which revealed a mass of 2.2 cm within the pituitary fossa. Mass was extending superiorly and compressing optic chiasma. High signal intensity was noted due to hemorrhage (Fig. 1). The patient was thus diagnosed with pituitary macroadenoma with hemorrhage. She was then started on cabergoline 0.25 mg twice weekly and was advised to follow up after one month with laboratory reports of serum prolactin.

After one month on 4th March 2016, serum prolactin levels dropped to 1152.0 ng/mL (3-18.6 ng/mL), with subsequent improvements in vision and headache. Perimetry test showed normal results. The patient was then prescribed with higher dose of cabergoline 1.25 mg twice a week and was advised to follow up after 3 months. Gradually her serum prolactin dropped down to high normal range after one and half year of treatment. She regained her normal menstrual cycle. On 31st July 2017, her serum prolactin was 19.0 ng/mL and her repeated MRI of brain with pituitary showed complete disappearance of pituitary lesion as compared to earlier imaging (Fig. 2).

Figure 1. Pituitary macroadenoma with hemorrhage

After one month on 4th March 2016, serum prolactin levels dropped to 1152.0 ng/mL (3-18.6 ng/mL), with subsequent improvements in vision and headache. Perimetry test showed normal results. The patient was then prescribed with higher dose of cabergoline 1.25 mg twice a week and was advised to follow up after 3 months. Gradually her serum prolactin dropped down to high normal range after one and half year of treatment. She regained her normal menstrual cycle. On 31st July 2017, her serum prolactin was 19.0 ng/mL and her repeated MRI of brain with pituitary showed complete disappearance of pituitary lesion as compared to earlier imaging (Fig. 2).

Figure 2. Normal Pituitary MRI after one and half years of treatment

DISCUSSION

Treatment of invasive giant prolactinoma with locoregional spread and visual field compromise using cabergoline has been observed to provide excellent outcomes. Our case illustrates the efficacy of cabergoline in treating invasive macroprolactinoma with hemorrhage and reversing patient’s symptoms. In female, prolactinoma is usually diagnosed earlier than men because of presence of menstrual disturbances due to hyperprolactinemia. Macroadenoma compresses pituitary stalk causing loss of dopamine inhibitory tone to the lactotroph and subsequent hyperprolactinemia. Our patient had initially presented with irregular menses in various hospitals but her symptoms were overlooked. Finally she presented to us with visual disturbances and headache.

In our case, serum prolactin was more than 320ng/mL during her first visit to us. After dilution of the sample, serum prolactin value was 49,680 ng/mL. The Endocrine Society’s
Clinical Guideline “Diagnosis and Treatment of Hyperprolactinemia” in 2011 recommends that in case of discrepancy between a very large pituitary tumor and a mildly elevated prolactin level, serial dilution of serum samples need to be performed to eliminate an artifact leading to a falsely low prolactin value the so called "hook effect" or high dose hook (HDH) effect.1,2 Significant improvements were observed in our case after an initial dose of 0.25 mg of cabergoline twice weekly. Also, patient showed dramatic improvement in visual field symptoms within the first month of therapy. Her menstrual cycle was normal after one and half years of treatment. During this period her serum prolactin was near normal. Various cases has been reported where treatment with cabergoline for 18 months markedly reduced tumor size and visual field improvement.4,5 Transphenoidal surgery is indicated only for patients who are resistant to dopamine agonist treatment.6 Also, the cure rate for macroprolactinoma and microprolactinoma treated with surgery is poor which is 30% and 80% respectively and there is a risk of hypopituitarism and recurrence.6 Occasionally, surgery may be required for prolactinomas with hemorrhage. This case supports medical treatment over surgery for prolactinomas with hemorrhage.

CONFLICT OF INTEREST
Authors declare that there is no conflict of interest in the publication of this case report.

REFERENCES
The pages should be numbered consecutively beginning from the title page. Numbers should be present in margins should be present.

Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use the following symbols, in sequence:

**manuscript submission**

Manuscript must be submitted in clear, concise English. Please submit a mandatory electronic copy of supplementary files along with your manuscript to our online submission system or via email. These supplementary files are: Forwarding, Authorship [signed by each author(s)] and Declaration letter(s) are available in the JNMA website.

For official purpose, please contact Dr. Robin Maskey

Editor-in-Chief

Journal of Diabetes and Endocrinology Association of Nepal

B.P. Koirala Institute of Health Sciences

Buddha Chowk, Dharan-18, Sunsari, Nepal

**manuscript preparation**

All Manuscripts should adhere to the JDEAN format. The manuscript must be typed double-spaced of one side of the A4 size white paper with Arial font (size 12): A minimum of 25 mm margins should be present.

The pages should be numbered consecutively beginning from the title page. Numbers should be written at the top right.

Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use the following symbols, in sequence:

- *
- †
- ‡
- §
- ||
- ¶
- **
- ††
- ‡‡

**References**

Examples of the Vancouver reference style are shown below. Please ensure that the reference style is followed precisely: if the references are not in the correct style, they may need to be retyped and carefully proofread.

**Web links and URLs:** All web links and URLs, including links to the authors’ own websites, should be given a reference number and included in the reference list rather than within the text of the manuscript. They should be provided in full, including both the title of the site and the URL, as well as the date the site was accessed, in the following format: The Mouse Tumor Biology Database. http://tumor.informatics.jax.org/mtbwi/index.do. Accessed 20 May 2013. If an author or group of authors can clearly be associated with a web link, such as for weblogs, then they should be included in the reference. Authors may wish to make use of reference management software to ensure that reference lists are correctly formatted. An example of such software is Papers, which is part of Springer Science Business Media.

**example reference style:**

Article within a journal


Article within a journal (no page numbers)


Article within a journal by DOI


**Conflicts of interest/ Competing Interests**

All authors of must disclose any and all conflicts of interest they may have with publication of the manuscript or an institution or product that is mentioned in the manuscript and/or is important to the outcome of the study presented. Authors should also disclose conflict of interest with products that compete with those mentioned in their manuscript. To prevent the information on potential conflicts of interest from being overlooked or misplaced, it needs to be part of the manuscript. JDEAN do not send the information on conflicts of interest to reviewers.

**Ethics approval and consent to participate**

Manuscripts reporting studies involving human participants, human data or human tissue must:

- include a statement on ethics approval and consent [even where the need for approval was waived]
- include the name of the ethics committee that approved the study and the committee’s reference number if appropriate

Studies involving animals must include a statement on ethics approval.
Article within a journal supplement

Book chapter, or an article within a book

OnlineFirst chapter in a series (without a volume designation but with a DOI)

Complete book, authored

Online document