DIABETES INDUCED MEMORY LOSS, AN ALARMING ISSUE: EVALUATION OF ITS PREVALENCE AND OTHER COMORBID DISEASE

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ABSTRACT
A metabolic disorder Diabetes characterized by hyperglycemia, involved multiple causes which promote to nonstandard metabolism of fats, proteins & carbohydrates. It can the basis of the damaging of diverse organs resultant dysfunction & may accountable for serious complications like neuropathy, CVS problem, renal impairment & dementia. The objective of the study is to find out the possible co morbidity with diabetes in Pakistan. The study designed basically comprised of questions circulated up to 100 patients from community to rule out the possible co morbidities after diabetes. Nearly effect of memory loss is found patients with age group of 15 – 30y is negligible in females while in males up to 6%, patients with the age group of 31 – 44 is found 3% in females & 15% in males & patients with age group 45 above is found to be 68% in females while 79% in males. Other co morbidities found in patients with the age group of 15 – 30y in female & male is 19%, patients with the age group of 31 – 44y in both male & female is 24% & patients with the age group of 45 above is 57% in both sex. By careful observations it is found that memory loss is grand risk in patients with diabetes & may lead to accountable for furthermore serious complication like CVS, renal failure, brain problem. Careful consideration & development of appropriate treatment by health facilitator is needed.

KEYWORDS: Diabetes, Hyperglycemia, Dementia, Neuropathy, Diabetes mellitus.

INTRODUCTION
A metabolic disorder consequential from inadequacy in insulin secretion, action of insulin or may be both specified by increase serum glucose level term as Diabetes mellitus. In the progression of this disease several pathogenic processes involved, comprises autoimmune B
cell shattering of the pancreas leads to the deficiency of insulin that result in insulin action resistance. An irregularity in carbohydrate, proteins and fat metabolism takes place due to the deficient action of insulin and leads to the complications at micro and macro vascular level.[1] Absolute insulin deficiency consequences by the destruction of B cells by a manner are categorizes as type 1 diabetes mellitus.[2, 3] According to the WHO, a defect in both insulin secretion and sensitivity of insulin is a complex heterogeneous group of metabolic state specified by elevated serum glucose level is categorizes as type 2 diabetes mellitus.[4] Epidemic of diabetes is owing to the increase prevalence of obesity linked to sedentary lifestyle in which excessive intake of alcohol, sugars and saturated fats and reduction in physical activity meanwhile. Environmental factors play vital part as compared to genetic factors in the phenomenon of diabetes manifested from the comparison between the Pima Indians from Arizona and Pima Indians from a remote area in Mexico and native Mexicans.[5] Blurred vision, weight loss, polydipsia, and polyuria and sometimes with polyphagia are the most prevalent symptoms of hyperglycemia.[6,7] Relation is contentious in between the basic types of dementia and diabetes. The most prevalent Pathophysiology of dementia is alterations in glucose, insulin and amyloidal metabolism as well as vascular disease advocated by findings of mechanistic studies, but remain doubtfull all of these mechanisms relevant to clinical. To begin the contribution of vascular disease and other co morbidity to dementia there is inclusion of high quality studies need to be commenced.[8] After ischemic stroke which is a consequence of multiple independent factors, including both small sub cortical and large cortical infacts especially involving the left medial frontal and temporal regions, besides vascular risk factors leads to the dementia. As stroke is the major co morbidity associated with diabetes.[9] In some studies, cognitive decline and dementia associated with older person with type two diabetes mellitus owing to severe hypoglycemia.[10] Diabetes has been related to cognitive impairment and both vascular and neurodegenerative frames of dementia proved by various epidemiological studies. At older ages dementia and diabetes are more common; their alliance is attributable to common source of possibility. At older ages cognitive functions alter by type 2 diabetes is also the positive mechanism when neurodegenerative changes of brain appears due to the aging. Subtle brain injury and poor performance on test of memory visual perception and attention linked with diabetes according to the Framingham Heart Study fram the data in this issue and neurology. Presentation on cognitive test fasting glucose was not associated. Reduced white matter integrity and gray matter atrophy was alliance with this.[11] Middle aged adults with longer exposure to type 2 diabetes have also reported accelerated cognitive decline by modern
studies which give result and submitted diabetes association with cognitive is not restricted to
old age.\textsuperscript{[11]} There is difficult to organize causal alliance between type 2 diabetes and
dementia leads to the number of pathways and complexity of possible risk factors. In patients
with type 2 diabetes risk factor for dementia include diabetes specific variables (increased
serum glucose level. Decreased serum glucose level, endothelial dysfunction, inflammation,
micro and macro vascular complications), alliance of cardiovascular risk factors with diabetes
type2.\textsuperscript{[12]} Using longitudinal SPECT(single photon emission computed tomography),
PiB(Pittsburgh computed-B) and (positron emission tomography).Aimed to recognize a
dementia-diabetes association with corresponding metabolic atypicalities. There is possible
rCBF (cerebral blood flow) reduction in small areas of the front temporal and limbic lobes
showed by follow up SPECT in patients with diabetes associated with dementia.\textsuperscript{[13]} the
possible mechanism of asscociation between the episodes of hypoglycemia and increased risk
dementia is cerebrovascular disease. Cerebrovascular damage is likely one of the
mechanism which give evidence concerning hypoglycemia and neurological squelae in
animal models.\textsuperscript{[14,15,16]} Another co morbidies linked with diabetescover coronary artery
disease with myocardial infarction, shock ventricular fibrillation, cardiac arrest and renal
failure.\textsuperscript{[17]} The major genesis of morbidity and mortality is COPD has linked with various
systemic vascular diseases include diabetes because of genetic factors sharing. Independent
of age, sex, body mass, smoking has an increased risk of diabetes as patients with COPD/
bronchitis.\textsuperscript{[18]} Obesity is One of the major health provocation thogout the world which
leads to vascular, metabolic and psychosocial problems. Linked between the obesity and
diabetes is well established because excess body weight is accomplished about 90% of
patients with diabetes type 2.\textsuperscript{[19]} The objective of the study is to findout the prevalence of
dementia associated with diabetes and what factors responsible to trigger diabetes and
comorbid disease.

**METHODOLOGY**

The study designed basically comprised of questions circulated in 100 patients (n= 100) out
of which 42 female & 58 male persons based on their pathophysiological effects and
comorbidades after diabetes especially people with the age group between 30 – 44 & 40 above
as shown in table below ( table 1& table 2). For the set of data , careful examination &
caution were in use Complete information of the patient were taken individually in order to
analyze the post disposing factor of diabetes especially memory loss. Collection of data
actually comprised 100 patients, separately male & female. The basic methodology based on
question divided into type, age & co morbidies process of human & we found how diabetes alter other physiological regarding their health.

RESULTS AND STATISTICAL ANALYSIS

Table 1: Pathophysiological effects and co morbidities after diabetes in females

<table>
<thead>
<tr>
<th>Age group</th>
<th>15 – 30 y</th>
<th>31 – 44</th>
<th>40 above</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of patients</td>
<td>6</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>Type of diabetes</td>
<td>Type I 6</td>
<td>Type II 0</td>
<td>Type I 9</td>
</tr>
<tr>
<td>Memory loss</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Other co morbidities</td>
<td>Cardiac arrest</td>
<td>Headache, pain, fainting &amp; cardiac arrest</td>
<td>Brain disturbance, kidney problem, osteoarthritis,</td>
</tr>
</tbody>
</table>

Status = female, Total no of patients = 42

Table 2: Pathophysiological effects and co morbidities after diabetes in male

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>15 – 30y</th>
<th>31 – 44y</th>
<th>45 above</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of patients</td>
<td>11</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>Type of diabetes</td>
<td>Type I 11</td>
<td>Type II 0</td>
<td>Type I 2</td>
</tr>
<tr>
<td>Memory loss</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Other co morbidities</td>
<td>Fatigue, headache, arrhythmia</td>
<td>--</td>
<td>Cardiac arrest, mild bone pain</td>
</tr>
</tbody>
</table>

Status = male, Total no of patients = 5

Female

![Figure 1: Percentage of dementia in female patients with diabetes](image)
It is estimated that the effect of memory loss in patients with diabetes majorly occur in peoples with the age group of 45 above may also be due to aging approximately with the ratio of 68% in females as shown (fig 1) & same in males the ratio up to 79%, of memory is loss by diabetic patients with the age group of 45 above as shown (fig 2). Effect of memory loss in diabetic patients with the age group of between 15 – 30 Y in females regarded as negligible ratio while in males the ration of memory loss is 6 % estimated while the people with age group between 31 – 44 y are also suffers memory problem with diabetes both male & female as shown (fig 1, fig2).

**Male**

![Figure 2: Percentage of dementia in male patients with diabetes](#)

**Female**

![Figure 3: Percentage of other co morbities in female patients](#)
Male

![Figure 4: Percentage of other co morbidities in male patients with diabetes](image)

Other co morbidities occurs with diabetic patients majorly include cardiac risk, headache for long time, kidney impairment, disturb cognitive behavior as well as bone disorder like osteoarthritis. It has also been noted that diabetes patients have greater risk cardiac arrest and kidney impairment & also disrupt cognitive behavior also reported in some diabetic patients of males & females up to with the ratio of 24% in both as shown (fig 3,fig 4). Basically the purpose of this study to evaluate out the post disposing factors of diabetes which suggest that diabetes is a disease which can promote other chronic diseases & become uncontrollable time by time.

**DISCUSSION**

Diabetes mellitus, a disorder occurs due to disturbance in metabolic pathways in the body. Major post disposing factors include cardiac arrest, headache & most patients also found with abnormal cognitive perception. The resultant factors are majorly seen with the patients with diabetes type II (non – insulin dependent). Diabetes patients with the age group of 45 above are mostly affected with memory loss owing to abnormal blood sugar level, moreover they suffer from aging process leads to dementia considered as a grand risk factor because integration of the CNS is affected by hyperglycemia. It is observed that diabetes patients with all age group suffer from CVS problem like stroke, arrhythmia so people who have diabetes have greater threat of CVS problem. By careful observation young female patients are negligible effect of memory loss due to diabetes while young male patients who have diabetes loss their memory up to some extent (6 %). Several studies support excessive sugar intake is one of the most important predisposing factor. But it is considered as serious issue.
in people with the age group of 45 above that they loss their memory due to diabetes. Kidney impairment, arthritis pain as well as abnormal cognitive perception are also found with patients with age group 45 above, by this review health facilitator needs further or strong management to treat diabetes especially needs strict or strong clinical management to prevent the post disposing factors after diabetes.

CONCLUSION
Hence we concluded by careful observation it is shown that diabetes is the disorder which is the grand risk factors for CVS patients, renal failure patients, as well as accountable for other sever & dangerous diseases of brain like dementia & abnormal cognitive perception. Memory loss is the major risk factors are found after diabetes almost people with all age groups accept younger. Our survey highlights subsequent factors that call for moreover investigation to find out the impact of memory loss on diabetes patients with the known mechanism. There is also message for health facilitator to should need strategies that efficiently prevent & treat post disposing factors of diabetes & plane especial guidelines to aware patients & concerning their health safety efficiently.

CONFLICT OF INTEREST: Not yet Decalared.

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