Author's response to reviews

Title: Relationship between working with Video Display Terminals (VDT) and frequency of dermatologic manifestations in office workers: a cross-sectional study

Authors:

Dr Omid Aminian (oaminian@sina.tums.ac.ir)
Parvin Mansoori (Mansoorisina@sina.tums.ac.ir)
Akbar Sharifian (sharifian@sina.tums.ac.ir)
Ehsan Rafeemanesh (rafeemanesh@sina.tums.ir)
Mohamadreza Iraniha (miraniha@sina.tums.ac.ir)

Version: 2 Date: 14 Mar 2004

PDF covering letter
Relationship between working with Video Display Terminals (VDT) and frequency of dermatologic manifestations in office workers: a cross-sectional study

Aminian Omid, M.D. Assistant professor of occupational medicine, faculty of medicine, Tehran university of medical sciences.

Mansoori Parvin, M.D. Professor of dermatology, dermatology department of imam hospital, Tehran university of medical sciences.

Sharifian Akbar, M.D. Assistant professor of occupational medicine, faculty of medicine, Tehran university of medical sciences.

Rafeemanesh Ehsan, M.D. Resident of occupational medicine, faculty of medicine, Tehran university of medical sciences.

Iraniha Mohammadreza, M.D. Resident of occupational medicine, faculty of medicine, Tehran university of medical sciences.

Correspondent Author: Aminian Omid, M.D.

E.Mail: oaminian @ sina.tums.ac.ir
**Abstract:**

Recently, it has been observed that working with VDTs like computer monitors may cause dermatologic manifestations in the faces of these workers.

For determining the relationship between working with these devices and frequency of dermatologic diseases, this analytic cross-sectional study has been designed.

For this purpose, 600 office workers was chosen randomly from an organization in Tehran and divided into two groups with respect to the exposure to the VDT in the recent year. These two groups were 306 out of 600 had less than 7 hours exposure in week with VDT and considered as exposure negative (non VDT worker), and the rest 294 ones had 7 hours or more exposure to VDT and considered as exposure positive. The frequency of skin diseases was compared in these two groups.

In the exposure positive and exposure negative groups the frequency of dermatologic abnormalities were 27 and 5 respectively.

With P.value <0.05 and after discarding confounding factors, there was a statistically significant difference between these two groups for dermatologic manifestations:
**Background**

Working with computers is very routine nowadays and it can cause different deleteriow effects on the health of the human beings(1). One of these complicatios is dermatologic diseases of the face(2). The most common among them are nonspecific erythema, acne rosacea, seborrheic dermatitis, pruritis, burning sensationk, and dry skin(3).

The prevalence of these symptoms in relation to working with VDTs are different in several studies: 8-10% in a series of descriptive studies and 13.5% in other reports(4)

VDTs (computer monitors) as a rule, make X-Ray radiation, ultraviolet, infrared and electro magnetic fields, which the rates of them is below the upper limits of standard exposure and can not be hazardous to human beings, or playing rale in causing dermatologic manifestations(4,5)

The exact cause of the face dermatologic symptoms is not clear, bat physica; conditions of the work place such as dryness, occupaational stress(6), electrostatic fields(7), and to a lesser extent electromagnetic fields of VDT, can play a role(8,9).

There was no prior study considering the role of working with VDTs in causing dermatologic symptoms on face in Iran. Accordingly this study has been designed for this purpose.
Materials and Methods:

We studied the office workers of an organization to Tehran with cross – sectional method.

Age, gender and weekly hours of work with VDTs were considered as independent variables and dermatologic manifestation of the face including erythema, acne rosacea, scaling, pruritis, and burning sensation as dependent variable.

600 office workers were collected randomly out of workers with approximately the same environmental conditions (temperature) humidity light, etc) and divided into 2 groups according to the exposure to the VDTs in the past year of work: 7 hours or more weekly exposure to VDTs in workplace or home and less than 7 hours weekly exposure respectively.

These workers gave an physical examination and filled out a questionir Non specific erythema, acne rosacea, Scaling and seborrheic dermatitis which were detected during examination and also pruritis and burning sensation, getting worse or produced by working with VDTs and alleviated after leaving work place were considered as acceptable positive dermatologic findings.

Results:

251 out of 600 workers were female and the remainder 349 were male. Age and sex distribution of the workers is demonstrated in table (1). The average age was 44.5 years.

294 workers had 7 hours or more weekly exposure in the past year and 306 ones had less than 7 hours weekly exposure.
In the exposure positive group and exposure negative groups 128 and 123 workers were female and 165 and 183 workers were male respectively.

The average weekly exposure rate in exposure positive group was 14 hours.

In the exposure positive and exposure negative groups 27 workers (16 female and 11 male) and 5 workers (3 female, 2 male) had dermatological manifestation respectively as depicted in table 2. Frequency of the workers with more than 7 hours weekly exposure in relation to the weekly hours of exposure and frequency of dermatological manifestations are shown in table 3.

Discussion:

After discarding onfounding variables (age and gender), we performed chi square test and with p. Value< 0.05 we found statistically significant difference between exposure positive and negative groups for the dermatologic manifestation.

According to the other studies, we can propose a relationship between dermatological symptom in the face and exposure to the VDTs.

On the other hand it is obvious in the table 3 that frequency of the dermatological symptoms of the face increases with increasing of weekly hours of work with VDTs.

Conclusions:

According to our study and similar studies, we recommend that office workers with long time exposures to VDT and dermatological symptoms of the face, should be followed up regularly. This concept is specially true for workers with dermatologic disorders in the face. In these workers we should consider occupational history of working with VDTs, weekly hours of exposure and effects of exposure on their symptoms.
Authors’ contributions:

AO participated in the design of the study and performed the data collection. MP conceived of the study, and participated in its design and coordination. SA drafted the manuscript and coordination. RE performed the statistical analysis. IM drafted the manuscript. All authors read and approved the final manuscript.

References:


9) Bergovisit E: skin symptoms and disease during work with VDT contact Dermatitis. 1994; 30:197-204.
Table 1 - Frequency distribution of office workers in relation to age and gender.

<table>
<thead>
<tr>
<th>Age(year)</th>
<th>Male</th>
<th>Female</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-29</td>
<td>15</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>30-34</td>
<td>48</td>
<td>41</td>
<td>89</td>
</tr>
<tr>
<td>35-39</td>
<td>64</td>
<td>57</td>
<td>121</td>
</tr>
<tr>
<td>40-44</td>
<td>95</td>
<td>56</td>
<td>151</td>
</tr>
<tr>
<td>45-49</td>
<td>99</td>
<td>66</td>
<td>165</td>
</tr>
<tr>
<td>50-54</td>
<td>25</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>55-59</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>349</td>
<td>251</td>
<td>600</td>
</tr>
</tbody>
</table>

Diagram 1 - Frequency distribution of office workers in relation to age and gender.

![Diagram showing frequency distribution of office workers by age and gender]
Table 2- Frequency of dermatological manifestations in workers with more than 7 hours weekly exposure and less than 7 hours

<table>
<thead>
<tr>
<th>Dermatologic manifestation</th>
<th>Frequency in exposure negative group</th>
<th>Frequency in exposure positive group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonspecific erythema</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Rosacea acnea</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Erythema, Burning,Scaling</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Itching, Burning</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Sum</td>
<td>5</td>
<td>27</td>
</tr>
</tbody>
</table>

Diagram2-Frequency of dermatological manifestations in workers with more than 7 hours weekly exposure and less than 7 hours
Table 3- Frequency distribution of exposure positive group with hourly week work and dermatologic manifestation

<table>
<thead>
<tr>
<th>Exposure time per week</th>
<th>People with dermatologic manifestations</th>
<th>Total persons with exposure</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7–11</td>
<td>4</td>
<td>104</td>
<td>3/85</td>
</tr>
<tr>
<td>12–16</td>
<td>11</td>
<td>126</td>
<td>8/6</td>
</tr>
<tr>
<td>17–21</td>
<td>4</td>
<td>32</td>
<td>12/5</td>
</tr>
<tr>
<td>22–26</td>
<td>6</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>27–31</td>
<td>2</td>
<td>8</td>
<td>25</td>
</tr>
</tbody>
</table>