Methodological study of the hypertension disorder: A meta-analysis

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Abstract-

Objective-The main objective of the current study is to evaluate the various research designs and analysis techniques used in the various hypertension studies with psychological variables.

Method-The purpose of the current study is to evaluate the various research designs and analysis techniques used in the various hypertension studies with psychological variablesson different webpage searched on published research works in the hypertension disease. We have included only original research articles in our study. Only 21 studies have been fulfilled criteria to be included in the present study.

Result-findings of the result in current study reveals that some analyses and research design were used commonly. Out of 21 researches, 8 research were logistic regression analyses, 1 two-way ANOVA, 1 logistic equation model, 1 descriptive and MANOVA analyses and 1 comparative analyses technique used. Other findings in research design were 2survey type, 3 cohort, 2 cross-sectional, 2 experimental, 3 observational, 1 longitudinal, 1 mixed and 1 case-control design used.

Conclusion-Study reveals that the stressor, anger, anxiety and personality factor were associated in progression of hypertension, and some kind of regression analyses method (e.g. logistic regression, binary logistic, logistic equation model, Cox regression) anova, manova techniques were highly used in experimental, observational, cross-sectional, cohort and other research design.

Keyword- Hypertension, Psychological Variables, Research Design, Analyses Technique

Conflict of interest- Authors have declared that no conflict of interest.

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I. Introduction

According to the world health organization (WHO), thenon-transmissible disease will be the leading cause of functional disability in the next decade (WHO, 2000). Hypertensive adults will reach 1.5 billion by 2025; around 30% of the world, population (Kearney et al, 2005). The etiology of hypertension is multifactorial, which results from the combined influences of a genetic and environmental factor. It predisposes to coronary heart disease and cardiac dysfunction and has deleterious neurological effects on theretina, central nervous system, and kidney (Sharma & Sawhney, 2016). The specific causes of high blood pressure are not known, but several factors and conditions may play a significant role in its development, including: smoking, being overweight or obese, lack of physical activity, too much salt in the diet, too much alcohol consumption (more than 1 to 2 drinks per day), stress, older age, genetics, family history of high blood pressure, chronic kidney disease, adrenal and thyroid disorder and sleep apnoea (WebMD). The overall prevalence of raised blood pressure in adult population within anaged group of 25years and over was around 40% in the year 2008(Sharma & Sawhney, 2016). The sympathetic nervous system is claimed to play an important role in the development of essential hypertension (Sharma, 2012).

Hypertension is classified as either primary or secondary, about 90-95% of cases are termed as primary hypertension which refers to high blood pressure for which no medical cause can be found (Carretero, 2000). The remaining of 5-10% of cases that is secondary hypertension is caused by other condition (MAYO, thefoundaton for medical education and research, 2008).

Objective-The main objective of the current study is to evaluate the various research designs and analysis techniques used in the various hypertension studies with psychological variables.
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II. Method

The purpose of the current study is evaluating the various research design and analysis technique was used hypertension study in the psychological variables on adifferent webpage. Forondifferent web pagessearched on published research work in the hypertension disease. We have included an only original article in our study. Only 21 studies have been found on sufficient for inclusion criteria in the present study.

III. Result and Discussion

Psychological conditions are increasingly linked to the cardiovascular disease. Findings of the study reveal that the following table-

<table>
<thead>
<tr>
<th>S N</th>
<th>Authors</th>
<th>Year</th>
<th>Country</th>
<th>Research Design</th>
<th>Tools</th>
<th>Sample Size</th>
<th>Data Analysis Techniques</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>James, et al.</td>
<td>2016</td>
<td></td>
<td>Survey</td>
<td>6-item Kessler psychological distress scale</td>
<td>2.88,78</td>
<td>Logistic regression modal</td>
<td>Psychological distress was associated with the higher level of blood pressure</td>
</tr>
<tr>
<td>2</td>
<td>Jones, Franks &amp; Ingram</td>
<td>1997</td>
<td></td>
<td>Cohort study design</td>
<td>Anxiety and Depression scale</td>
<td>2992</td>
<td>Cox regression analysis</td>
<td>High anxiety and high depression were associated with hypertension</td>
</tr>
<tr>
<td>3</td>
<td>Sharma, et al</td>
<td>2012</td>
<td>Shumla, India</td>
<td>Personality, Stress and Anxiety scale</td>
<td>100</td>
<td>Two-wayANOVA</td>
<td>Male were showing high level of type A personality and anger than female but female were showing high stress and anxiety than male</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Agyei, et al</td>
<td>2010</td>
<td>Sub-Saharan Africa</td>
<td>Cross-sectional research design</td>
<td>212</td>
<td>Binary logistic regression analysis</td>
<td>20% of the participants were showing the high level of depressive symptoms and only 9% of participants have shown the moderate level of depressive symptoms with high blood pressure</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Hamer, et al</td>
<td>2010</td>
<td></td>
<td>12-item general health questionnaire</td>
<td>33105</td>
<td>Logistic regression model</td>
<td>Distress was associated with the high blood pressure</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Player, King, Mainous&amp;Geesey</td>
<td>2007</td>
<td></td>
<td>Cohort research design</td>
<td>2.334</td>
<td>Secondary data in logistic regression</td>
<td>Survival analysis was showing the trait anger has associated with the progression of coronary heart disease</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Elias, et al</td>
<td>1956-1964</td>
<td></td>
<td>Experiment al design</td>
<td>Neuropsychological test</td>
<td>1702</td>
<td>Hypertension was associated with the pathogenic in mild cognitive impairment</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Haynes, et al</td>
<td>1965-1967</td>
<td></td>
<td>Survey research design</td>
<td>Self-made tools by expert opinion</td>
<td>1822</td>
<td>Logistic equation model</td>
<td>The framing hum type A behavior pattern and other psychological variables were not associated with the level of coronary heart disease</td>
</tr>
<tr>
<td>9</td>
<td>Kohn, et al</td>
<td>1972</td>
<td>Israel</td>
<td>Experiment al research design</td>
<td>Biofeedback</td>
<td>101</td>
<td>Relaxation technique biofeedback was positively associated with the management of hypertension disease</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Yan, et al</td>
<td>2000-2001</td>
<td>Observation study design</td>
<td>Time urgency/impatience(TUI), achievement strategy/competitiveness (ASU), hostility, depression and anxiety were associated with the hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Kwek, et al</td>
<td>2002</td>
<td>America</td>
<td>Cross-sectional research design</td>
<td>Health-related quality of life</td>
<td>1094</td>
<td>Descriptive and Manova analyses</td>
<td>Physical and mental componentswere significa ntly associated with the hypertension</td>
</tr>
<tr>
<td>12</td>
<td>Ross, Wolkar &amp; MacLeod</td>
<td>2004</td>
<td>United Kingdom</td>
<td>Observation study</td>
<td>Illness perception</td>
<td>514</td>
<td>Logistic regression</td>
<td>Belief about illness perception and medication</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Year</th>
<th>Country</th>
<th>Methodology</th>
<th>Number of Participants</th>
<th>Analyses</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Friedman, et al</td>
<td>2001</td>
<td>New York, America</td>
<td>New York, America</td>
<td>283</td>
<td>Logistic regression analyses</td>
<td>Job strain (situational stress) was associated with hypertension</td>
</tr>
<tr>
<td>14</td>
<td>Krieger</td>
<td>1990</td>
<td></td>
<td></td>
<td>101</td>
<td>Subjective appraisal stressor was associated with hypertension</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Rosengren, Houken, Oumpuu, Shiwa &amp; Zubaid</td>
<td>2004</td>
<td>52 countries</td>
<td>Case-control design</td>
<td>24767</td>
<td>Logistic regression analyses</td>
<td>General stress work and home stress were associated with the hypertension</td>
</tr>
<tr>
<td>16</td>
<td>Vrijkatte, van Doomen &amp; Geus</td>
<td>2000</td>
<td></td>
<td></td>
<td>109</td>
<td>Logistic regression analysis</td>
<td>Work stress was partially mediated in the hypertension</td>
</tr>
<tr>
<td>17</td>
<td>Schneider, Egan, Johnson, Drobry &amp; Julius</td>
<td>1986</td>
<td></td>
<td>Observation and study design</td>
<td>Spielberger State-Trait Personality Test, anger expression scale and the state-trait anxiety reaction scale</td>
<td>Anger was positively associated with the hypertension</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Kilander, Nyman, Boberg, Hansson &amp; Lithall</td>
<td>1998</td>
<td>Sweden</td>
<td>Cohort study</td>
<td>999</td>
<td>Hypertension and cognitive impairment were strongly untreatable associated with men</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Barksdale</td>
<td>2009-2012</td>
<td>America</td>
<td>Longitudinal study design</td>
<td>128</td>
<td>Comparative analyses</td>
<td>Chronic psychosocial stressors, daily hassles, racial discrimination and financial were positively associated with hypertension</td>
</tr>
<tr>
<td>20</td>
<td>Kretchy, Owusu-Daaku, Danquah &amp; Asampong</td>
<td>2015</td>
<td></td>
<td>Mixed method research design</td>
<td></td>
<td>Logistic regression</td>
<td>Depression, anxiety and stress were associated with hypertension disease</td>
</tr>
<tr>
<td>21</td>
<td>Sharma &amp; Sawhney</td>
<td>2016</td>
<td>Jammu &amp; Kashmir, India</td>
<td></td>
<td>DASS-21</td>
<td></td>
<td>10% patients were showing in depression, 70% were anxious and 10% were stressed on the disease of hypertension</td>
</tr>
</tbody>
</table>

Reveal that the above the table had shown in different researcher were used in deferent research design and analyses technique. Some research design and data analyses method were maximum uses and some were minimum. James et al (2016) Hayness et al (1965-1967) were used in survey type of the research design. Player, King, Mainous & Gessey (2007); Kilander, Nayman, Boberg, Hansson & Lithall (1998); Jones, Franks & Ingram (1997) were used in cohort study design, Agyei, et al (2010) & Kwek et al (2002) was used in the cross-sectional design.

Another study Elias, et al (1956-1964) & Kohn et al (1972); were used in the experimental research design in their research. Yan et al (2000-2001); Ross Walkar & MacLeod (2004); Schneider, Egan, Johnson, Drobry & Julius (1986) were used in the observational research design. Rosengren, Houken, Oumpuu, Shiwa & Zubaid (2004) was used in case-control study design; Barksdale (2009-2012) was used in longitudinal research design and asimilar study was used in mixed method research design (Kretchy, Owusu-Daaku, Danquah & Asampong, 2015).

For the purpose of meta-analyses, we are analyzed in data treatment technique in adferent research article. We are found in deferent researcher were using in the deferent analyses method e.g. James, et al (2016); Jones, Franks & Ingram (1997); Asampong (2016); Hamar, et al (2010); Player, King, Mainous & Gessey (2007); Hayness, et al (1965-1967); Yan et al (2000-2001); Ross Walkar & MacLeod (2004); Rosenberg, Houken, Oumpuu, Shiwa & Zubaid (2004); Vrijkatte van Doomen & Geus (2000) & Kretchy, Owusu-Daaku, Danquah & Asampong (2015) were used in diferant kind of regression analyses model in data treatment such as cox regression, binary logistic regression, logistic regression, logistic equation model. A logistic regression model was used in ahiger number of different research. One researcher was used in Annova technique and one another researcher was used in Mannova analyses technique on data treatment.

Findings of the meta-analyses shown in some psychological factors were correlated in higher such as distress, anger, anxiety and personality trait. James, et al (2016); Sharma, et al; Friedman, et al (2001);
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Rosengren, Houken, Oumpuu, Sliwa&Zubaid (2004); Vrijkatte, van Doomen&Geus (2000) these are found in their study, the stress and other any type of chronic and severe stressor is highly associated hypertension. Barksdale (2009) indicated that the chronic psychological stressor, daily life hassle, racial discrimination and financial burden was associated with the progression of hypertension. Kretchy, Owusu-Daaku, Danquah&Asampong (2015) suggested that depression, anxiety and stress were associated with hypertension disease. Sharma &Shawey (2016) reveal that the 10% hypertension patients were showing depression, 70% were anxious and 10% were stressed.

Similar studies Schnieder, Egan, Johnson, Drobr&Julius (2000) investigated that the anger was positively associated with hypertension. Jones, Franks & Ingram (1997) reveal that high anxiety and high depression were associated with hypertension disease. Sharma et al(2012) find that the male person was ahigh level of type A personality and anger but femaleswere high stress and anxiety. Another study shows that the trait anger has associated with the progression of heart disease (Player, King, Mainous&Geesey, 2007). Kwek, et al (2002) find that the physical and mental component was significantly associated with hypertension. Ross, Wolkar& MacLeod (2004) suggested that belief about illness perception and medication were interconnected in hypertension. Kohn et al (1972) suggested that the relaxation and biofeedback were positively associated with the management of hypertension disease.

IV. Conclusion

Reveal that the study we concluded that stressors, anger, anxiety and personality factor were associated with progression of hypertension, and some kind of regression analyses method (e.g. logistic regression, binary logistic, logistic equation model, Cox regression)ANOVA,MANOVA technique was highly used in experimental, observation, cross-sectional, cohort and other research design.

References


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