

Employees Mental Health and Work Productivity: The Mediating Role of Presenteeism and Absenteeism at the governmental Hospitals in Qalyubia Governorate

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Abstract:

The research aimed to examine the direct impact of Employees mental health (EMH) on work productivity (WP) at the Governmental hospitals in Qalyubia Governorate, and explore whether presenteeism (PRE) and absenteeism (ABS) play a mediating role in this relationship. The research began with a literature review of EMH, PRE, ABS, and WP, followed by developing a conceptual framework and formulating seven main hypotheses. A field study was then conducted using a sample of 374 medical and nursing staff at the Governmental hospitals in Qalyubia Governorate. Collected data were analyzed using partial least square structural equation model (PLS-SEM) using Smart PLS V.4 Software. The findings of the study imply that EMH has a statistically significant positive direct impact on WP. Moreover, statistical results also revealed that both PRE and

ABS play a mediating role in the relationship between EMH and WP at the Governmental hospitals in Qalyubia Governorate.

Keywords: Employees Mental health, Presenteeism, Absenteeism, work Productivity

الصحة العقلية للعاملين وإنتاجية العمل: الدور الوسيط للحضور والتغيب عن العمل في المستشفيات الحكومية بمحافظة القليوبية

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ملخص البحث :

استهدف البحث دراسة التأثير المباشر للصحة العقلية للعاملين على إنتاجية العمل في المستشفيات الحكومية بمحافظة القليوبية، كما يسعى البحث لاستكشاف ما إذا كان الحضور للعمل والتغيب عن العمل يلعبان دور الوسطة في هذه العلاقة. بدأ البحث باستعراض أدبيات الصحة العقلية للعاملين، الحضور للعمل، والتغيب عن العمل وإنتاجية العمل، يليها تطوير إطار مفاهيمي ومن ثم صياغة سبعة فرضيات رئيسية. وقد تم إجراء دراسة ميدانية باستخدام عينة من ٣٧٤ من الكوادر الطبية والتمريضية في المستشفيات الحكومية بمحافظة القليوبية. وقد تم تحليل البيانات التي تم جمعها باستخدام نموذج المعادلة الهيكلية للمربعات الصغرى الجزئية (PLS-SEM) باستخدام برنامج Smart PLS V.4. وأوضحت نتائج الدراسة أن الصحة العقلية للعاملين لها تأثير إيجابي مباشر دال إحصائياً على إنتاجية العمل. وعلاوة على ذلك، كشفت النتائج الإحصائية أيضاً أن كلا من الحضور للعمل والتغيب عن العمل يتوسطان العلاقة بين الصحة العقلية للعاملين وإنتاجية العمل في المستشفيات الحكومية بمحافظة القليوبية.

الكلمات الدالة: الصحة العقلية للعاملين، الحضور للعمل، التغيب عن العمل، انتاجية العمل

1. Introduction

The World Health Organization (WHO) in its 2014 report defined mental health (MH) as a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with people, and the ability to adapt to change and cope with adversity. Workplaces that promote good MH and support employees with mental illness are more likely to decrease absenteeism and presenteeism, and thus increase individual productivity (Oliveira et al., 2023).

Absenteeism is due to involuntary absence such as certified sickness or voluntary absence such as absence because of personal aims, motivations, and comprising shirk (Sagie, 1998). In comparison, presenteeism is the act of workers who come to work despite feeling sick (Johns, 2010). Both absenteeism and presenteeism affect the firm's expenditures. Absenteeism increases the firm's direct cost, such as replacement workers costs, and indirect costs, such as productivity loss because of replacement or co-worker and supervisor productivity loss (Tangchareonsamut et al., 2021). Presenteeism has become a common phenomenon in the workplace, especially in medical and nursing staff working due to heavy workloads, shift work, and irreplaceable duties (Li et al., 2019). Presenteeism not only negatively impacts on the medical and nursing quality of

working, job satisfaction, job preference, but it may also result in direct and indirect productivity loss to companies which may negatively impact the health security of patient. Moreover, managing presenteeism is critical to decrease the high costs of related productivity loss resulting from employee's work during they are sick (Koopmanschap et al., 2005). Thus the definition of presenteeism should concentrate on the behavior itself rather than as outcome (Li et al., 2019). Unfortunately, only few previous studies measured presenteeism as a separate variable (Nowak et al., 2022), but various studies defined presenteeism as a measure of productivity loss that occurs when working while sick (Oliveira et al., 2023; Nappi et al., 2020). The absenteeism due to voluntary or involuntary absence among medical and nursing staff influenced the hospitals in many ways, such as decreasing patient quality care, increasing complaints and reducing performance (Tangchareonsamut et al., 2021).

Hospital or the healthcare sector is an organization with two groups of personnel. The first group includes health service providers that are represented in the individuals who directly introduce medical service, such as (doctors, nurses, pharmacists, and medical technologists. Another group includes support workers who don't directly introduce medical services but are individuals who perform as the hospital's back office, such as (executives, engineers, accountants, statisticians, housekeepers, and security guards) (WHO report, 2006).

Most of the researches on absenteeism, presenteeism and work productivity were analyzed in different sectors and health support workers (Sharma & Kumra, 2020; Oliveira et al., 2023; Lokke, 2022). The relationship between EMH and WP is a critical concern for organizations, particularly in high-stress environments like health service providers; however, studies among medical and nursing staff workers are limited. So the present study aims to determine the prevalence of EMH, PRE and ABS of medical and nursing workers and the relationship with WP.

2. Research problem

During the last 20 years, there has been great progress into the study of MH of medical and nursing staff working. MH is now the center of focus of social scientists, economists, and policy makers alike (Oliveira et al., 2023; Aquino et al., 2020). Workplaces that boost positive MH and support individuals with mental disorders are more likely to decrease absenteeism (i.e., reduced number of days away from work) and presenteeism (i.e., being at work but ill), and thus increase individuals productivity (Oliveira et al., 2023).

MH disorders/problems in the workplace, such as depression, anxiety, stress, and sense of being irreplaceable have increasingly been confirmed as a problem in most countries especially, healthcare sector in Middle Eastern countries such as Egypt. A study conducted among healthcare professionals in Egypt

emphasized that MH consequences and reported that anxiety (42.6%), depression (60%), and work stress (51%) (Elsayed et al., 2023). Another study investigated mental well-being in healthcare workers in Egypt and reported anxiety (76.4%) and depressive symptoms (77%) (Elkholy et al., 2021).

Therefore, the present study will investigate the direct impact of EMH on WP, and the indirect impact of EMH on WP through PRE and ABS at Governmental hospitals in Qalyubia Governorate.

The health sector is selected as an empirical field generally for the following reasons:

- A. This sector represents the research problem clearly, and it is an appropriate environment to apply the study because of the direct result of medical and nursing staff working, while ill is the subsequent in efficiency of work and increasing in errors, which in directly leads to decrease productivity.
- B. The health sector is one of the most service sectors as EMH of medical and nursing staff will adversely affect the health security of patients, increasing in patients' falls and medication errors.
- C. This sector is considered one of the most influential sectors due to the importance of improvements and developments in healthcare service quality in Egypt.

Depending on what previously mentioned, research problem can be formulate in the following questions:

- What is the direct effect of EMH on WP at the Governmental hospitals in Qalyubia Governorate?
- Does PRE play a mediating role in EMH - WP relationship?
- Does ABS play a mediating role in EMH - WP relationship?

3. Theoretical background and hypotheses development

3.1 Employees Mental health

Mental health is a growing area of scholars. According to Lukat (2016), mental health has traditionally been defined as the absence of psychopathology. While, (United States Department of Health and Human Services, 1999) has viewed positive mental health “a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with people, and the ability to adapt to change and cope with adversity”. In the same vein, the World Health Organization (WHO) realized mental health entirely as “a state of physical, mental and social well-being and not merely the absence of disease or infirmity (Sharma & Kumra, 2020).

In contrast, many studies focused on mental health problems that illustrated by mental disorders which mainly include depression, anxiety and stress that have a negative impact on workplace performance and productivity (Hennekam et al., 2020; Badri et al., 2022; Bubonya et al., 2017)

The present research views mental health as the positive concept of thriving which demonstrates high degrees of psychological or subjective well-being, which consistent with

(Guomundsdottir, 2011). Thus, people's mental health involving their thoughts, feelings and actions (Sharma & Kumra, 2020).

An additional distinction between mental health and subjective well-being is conducted by Keyes (2002), who announced that subjective well-being is a sign of positive mental health, rather than its core ingredient. Positive mental health involves both cognitive and social dimensions and is related to increasing levels of roles in different life aspects.

Mentally healthy employees give major benefits to their companies. Jointly, positive workplace conditions can enhance people mental health. Work practices that promote a feeling of engagement and motivation can boost positive mental health (Dutton et al., 2011). Previous studies interested in explaining predictors of mental health (Sharma & Kumra, 2020), because mental health impacts employee turnover, and absenteeism too (Lokke, 2022), in addition related to presenteeism and productivity loss (Oliveira et al., 2023).

3.2 Presenteeism

The concept of presenteeism has been developed by cooper (1996) as the first researcher who studied and analyzed the concept of presenteeism as "being at work when you should be at home either because you are ill or because you are working such long hours that you are no longer effective". A very common definition and the one conducted by Johns (2010), is the act of workers who

come to work despite feeling sick, this act increases the organization's productivity loss at work due to health problem.

In line with this, in the present study presenteeism is described as an outcome rather than a behavior. In other words, Aronsson and Gustafsson's (2000, p.503) defines this construct as "of people, despite complaints and ill health that should prompt rest and absence from work, still turning up at their jobs".

In the recent study we focus on sickness presenteeism for this reason we prefer the definition of presenteeism set out by Johns (2010) that concentrating on the links between health and on-the-job productivity.

Prior studies investigate the extent to which different determinants and correlates aspects of work are associated with presenteeism, these factors that promote presenteeism include poor working conditions at the organizational level, these organizational conditions include stressful work, lack of support from co-workers, dissatisfaction with work environment and work place bullying (Hirsh et al., 2017; Arnold, 2016; Conway et al., 2016). At the individual level, these factors include people with children, lower waged workers, employees with poor health status work related demand (Arnsso & Gustafsson, 2005; Burton et al., 2005). Other studies have also viewed that mental disorders have a greater effect on numbers of cut back days of employees. At the contextual level, occupational status factors have been related to presenteeism include levels among the care, welfare and education sectors, work

autonomy, supervisory responsibilities and long working hours or time pressure that increase sickness presenteeism (Arnold, 2016; Aronsson & Gustafsson, 2005). Lack of job security (Hirsch et al., 2017) and lack of flexibility from employers to support sickness absence (Johansson & Lundberg, 2004) are also related to higher presenteeism.

According to the literature, studies on presenteeism have two limitations. The first is European scholars who concentrate on “ill” & “work” when defining presenteeism and the most of them prefer to measure its occurrence as a behavior (Aronsson and Gustafsson’s, 2000). While American scholars prefer to define presenteeism according to the productivity loss as an outcome (Turpin et al., 2004). According to COR theory, the present study focus on the antecedents and outcomes rather than the behavior itself.

3.3 Absenteeism

Johns (1997) one of the pioneers of the absenteeism construct, defined absenteeism as not displaying for scheduled work, during along research history, Johns (2008) overviewed absenteeism as the failure to report for work as scheduled, integrates a discrimination between voluntary and involuntary absence (Chadwick-Johns et al., 1973). According to literature, absenteeism has two lines of operationalization exist that are particularly where by the distinguishing between involuntary absence such as certified sickness and voluntary absence such as absence because of personal aims and motivations, comprising

shirk (Chadwick-Johnes et al., 1973; Sagie, 1998). Therefore, one orientation of research operationalizes involuntary absence by particular health outcomes such as sickness absence because of neck pain or lower-back pain (Hoogendoor et al., 2002; Ariens et al., 2002); because of overwork or exhaustion (Hyde et al., 2006); medically certified sickness absence (Elovainio et al., 2005); or psychiatric disorders (Stansfeld et al., 1997).

In contrast to this approach, other orientation of researchers based on the operationalization of absenteeism by not clarifying any causes for being absent from work (Johns, 1997; Lokke Nielsen, 2008; Kristensen et al., 2006). Thus, absenteeism can be due to sickness or built on more personal agendas (Sagie, 1998).

As the review reveals, researchers pay attention to a desire to understand what causes absenteeism due to enclosure the related negative consequences for organizations. For instance, absenteeism impact negatively on job performance (Viswesvaran,2002) and a higher turnover intentions in organizations (Berry et al., 2021). Absenteeism is essentially important outcome for some aspects of the workplace such as stress and work overload (Jamal, 2007); low organizational trust (Deery et al., 2006); and work routines (Melamed et al., 1995). Absence may also increase because of withdrawal behaviors that arise from negative work conditions, allostatic load theory (Lupien et al., 2006) prophesies that such extended exposure results in a psychophysiological imbalance that lately leads to chronic health complaints. Thus, from a theoretical

perspective, in organizations the high levels of absenteeism, and lately turnover consequences to see evidence of health problems (Lokke, 2022).

While, there is a growing awareness of absenteeism between researchers and human resource management specialists, they recognized that absenteeism has a lower significant economic impact on organizations, potentially less than that of absenteeism cost (Johns, 2008).

3.4 Work Productivity

Workplaces that enhance positive mental health and help individuals with mental health disorders are more likely to minimize absenteeism (i.e., decreased number of days away from work) and presenteeism (i.e., diminished productivity while at work), and therefore maximize work productivity (Oliveira et al., 2023). productivity is defined as the ability of people to promote their work outcome through raises in the quantity and/or quality of the product or service they deliver (Leaman & Bordass, 2006).

Workplace research viewed the importance of the effect of the physical work environment on employees' productivity. Workplace conditions like air quality, temperature, lighting and noise are aspects of environmental features related to employees' health, well-being and productivity (Haynes et al., 2017). Actually employees' self-reported measures of pleasure at work, well-being and productivity are positively related to improving the internal environment of working conditions (Nappi et al., 2020).

Several prior research results have underlying the role of employee productivity as a critical factor and the main driving force for organizations in emerging countries. Companies are required to be capable of competing in competitive markets to gain a sustainable advantage. Thus, the company is needed to remain to increase employee productivity progressively (Augenza, 2012). Previous studies have discussed that employee productivity is highly dependent on the workplace conditions, individual aspects and management system in the company (Nappi et al., 2020; Sudar mo et al. 2022). Different factors have been developed to explain the individual and workplace aspects that result in work outcomes such as presenteeism and absenteeism which are negatively associated with productivity (Oliveira et al., 2023; Nappi et al., 2020).

The theoretical link between presenteeism and productivity can be explained by COR theory (Hobfoll, 1989). The conservation of resources (COR) theory claims that employees try to maintain and build valuable resources (e.g. positive emotion, money, psychological well-being) that may support them to achieve goals. For instance, the COR theory prompts people to go to work while ill, instead of staying at home. Combining this input with COR theory, work needs resource investment, this will lead to difficult and work overload for mental ill workers related to their condition (Troughakos & Hideg, 2009).

3.5 Direct link between employee's mental health and Work productivity

The World Health Organization (WHO) defined mental health as a case of well-being when every employee recognizes its potentials and administers normal stress well, can be productive, and prolifically participate in the community (Aquino et al., 2020). Mental health is now the center of centralize of social scientists, economists, and policy makers (Lukat et al., 2016).

Positive mental health and work performance: a study viewed that higher positive well-being result in higher job performance-promoted potential and greater productivity (Keyes, 2002). High stressors associate with workplace environment such as complex structures, work agendas and allowance systems which lead to the risk of recurrence mental illness (Hennekam et al., 2020) that negatively affects workers' productivity results in substantial economic costs for companies, employees and society more generally (Bubonya et al., 2017).

Buist-Bouwman et al., (2005) investigated the effect of mental illness and productivity as an important labor market outcome, the author found that mental illness adversely affects employment and labor force participation and reduces the productivity. Furthermore, Oliveira et al., (2023) assert that there was clear evidence that poor mental health was associated with lost productivity. Moreover, Bouwmans et al., (2014) find that depression and/or anxiety were significantly associated with productivity losses. Therefore, as the

literature assumes a relation between mental health and productivity, we hypothesize as follows:

***Hypotheses (H1):** Employee's mental health positively associated with work productivity.*

3.6 Direct link between Employee's mental health and presenteeism

Benefits of mental health have been demonstrated across work and non-work fields. Employees reporting PMH greater work performance, greater social relationships and greater physical health (Keyes, 2002). Additionally, positive job environments can participate in increasing employees' mental health as well as decreasing their presenteeism (Dutton et al., 2011).

Poor health in the workplace is costly to employers and the economy. This is partly because of health disorders causing employees to ordain less time at work, such as worklessness, decreased work hours and presenteeism (Hirsh et al., 2017).

Studies proposed that being present at work without being in whole health (oftentimes mentioned to as 'presenteeism') is a common phenomenon (Johns, 2010). Psychological and behavioral effects often mental health disorders are terms of how the environment impacts employees in workplace (Comway et al., 2016). In addition to decreasing disclosure and increasing workplace mental health may increase presenteeism (Berry et al., 2021). Suzuki et al., (2015) investigated the influence of presenteeism on depression and sickness absence due to mental

disease through longitudinal study, which found that workers with higher sickness presenteeism were have higher rates of depression and sickness absence due to mental disease. In the same direction, Bubonya et al., (2017) analyzed the relationship between mental health and presenteeism in the workplace, the author found that presenteeism was higher among workers who reported being in poor mental health. Moreover, Suzuki et al., (2015) estimated work loss days because of presenteeism related to commonly occurring mental and physical disorders through cross-sectional study, and illustrated that workers with mental disorders had more work loss days due to presenteeism than those without mental disorders. Therefore, we hypothesize as follows:

Hypotheses (H2): Employee's mental health negatively associated with presenteeism.

3.7 Direct link between presenteeism and work productivity

Presenteeism is the behavior of physically coming work when a health status could have reasonably required absence (Robertson & Cooper, 2011), some previous studies have focused on chronic disorders (MacGregor & Cunningham, 2018). Thus, presenteeism should negatively affect productivity through health condition. Employees who continued presence at work despite their health condition, ill or injured (Aronsson & Gustafsson's, 2000).

In this context, prior studies that have illustrated the linking between presenteeism and productivity are lacking because of measurement difficulties, presenteeism has been detected to foretell

productivity related constructs like stressful work, lack of support from co-workers, dissatisfaction with work environment and workplace bullying (Hirsh et al., 2017; Arnolt, 2016; Conway et al., 2016). In this sense, last studies suggested that presenteeism may actually impair productivity in the proposed direction.

The theoretical link between presenteeism and productivity can be understood by COR theory (Hobfoll, 1989). Combining this inputs with COR theory, employees need resource investment, although their health condition. In lieu of, attending work despite the incompetence to efficiently invest resources into workplace jobs is theoretically leads to decrease productivity at organizations (Troughakos & Hideg, 2009). Productivity loss because of presenteeism essential proposition, in the same direction, with COR theory and past research we expect a negative relation between presenteeism and productivity. So we hypothesize as follows:

Hypotheses (H3): Presenteeism negatively predicts work productivity.

3.8 Direct link between employee's mental health and absenteeism

This section provides an overview of the relation that demonstrates how employee absenteeism can be affected by mental health. Absenteeism refers to time off work because of voluntary and/or involuntary absence (Lokke, 2022). There has been a growing interest in explaining the significance of

employee's mental health context for the prediction of absenteeism (Berry et al., 2021).

Workplace policies and benefits which upholding employees suffering with mental health disorders and expand access to better pursuit guidelines that may enhance the quality of work life and result in reducing absenteeism and lost productivity (Albion, 2008).

Extant literature demonstrates the positive association between the presence of mental health problems and absenteeism (Suzuki et al., 2015). Furthermore, Berry et al., (2021) found that experiences and perceptions of mental health-related stigma are associated with greater absenteeism. While, Albion, (2008) showed that organizations with high levels of work demands are expected to see evidence of health problems with resultant high levels of absenteeism and, ultimately, turnover. Moreover, Buist-Bouwman et al., (2005) investigated the combination of physical and mental conditions in terms of their influence on absenteeism, the author found that both physical and mental problems were related to an additive raise in absenteeism. Based on the above, we hypothesize as follows:

Hypotheses (H4): Employee's mental health negatively associated with absenteeism.

3.9 Direct link between absenteeism and work productivity

Absenteeism is a condition when co-workers don't show at work on the working day, which may be caused by any condition (Gutteridge, 2011). Health-related productivity loss has been

explained as an increase in an employee's productivity due to presenteeism and absenteeism for health conditions (Koopmanschap et al., 2005). Prior literature viewed the relationship between absenteeism and productivity, either voluntary absence or involuntary absence are costly and negatively related to productivity (Lokke, 2022). This interest has mainly been driven by a desire to explain what maximize levels of absenteeism as well as increase negative consequences for companies (Berry et al., 2021). For instance, empirical studies confirmed that absenteeism results in reducing job performance and productivity (Lokke, 2022).

Extant research on the relationship between employee absence and productivity is lack integrated and systematized. More precisely, the higher level of employee absence, the poorer the proportion of individual's productivity through completing work and avoiding distraction (Li et al., 2019). In this sense, there is gap in the literature about the investigation of the relationship between absenteeism and productivity. Therefore, we hypothesize as follows:

Hypotheses (H5): Absenteeism negatively predicts work productivity.

3.10 Presenteeism mediates the employee's mental health-work productivity relationship

As discussed above, mental health is associated with presenteeism, which in turn is associated with productivity.

Besides, sporadic studies revealed that mental health is also associated with productivity (Keyes, 2002; Bubonya et al., 2017 & Oliveira et al., 2023). These hypothetical associations are fit for the mediation model. Furthermore, Komp (2022) found that presenteeism mediates the association of health promoting collaboration to well-being. A study by Costa (2020) also revealed that presenteeism mediates the association between psychosocial factors at work and common mental disorders (CMD). In addition Jia (2022) concluded that health status affects the task performance through presenteeism. In the same direction, Liao et al., (2023) found that presenteeism is partially mediated the association between psychological detachment & post-traumatic stress disorder. Accordingly, we hypothesize that:

Hypotheses (H6): Presenteeism mediates the relationship between employee's mental health and work productivity.

3.11 Absenteeism mediates the employee's mental health-work productivity relationship

According to the literature, health-related productivity loss has been defined as a decrease in an individual's productivity due to absenteeism (Koopmanschap et al., 2005). Besides that, the world health organization's definition of "health", it involves not only physical health but also mental health (Li et al., 2019). Studies have also found that mental health is related to absenteeism, which in turn is related to productivity. Related to this, study by (MacGregar & Cunningham, 2018) analyzed the

impact of supervisor support on employee current health through the mediating effect of absenteeism, where the findings illustrated that absenteeism mediated association between mental health and physical health and later outcomes (Hale & Viner, 2018). Bouwmans et al., (2014), also concluded that depression and/or anxiety indirectly affects productivity losses throughout the mediating role of absenteeism. Given the above, absenteeism can have a role in the relationship of mental health to productivity. Therefore, we propose the following:

Hypotheses (H7): Absenteeism mediates the relationship between employee’s mental health and work productivity.

The proposed model for hypothesis testing is presented in figure.1

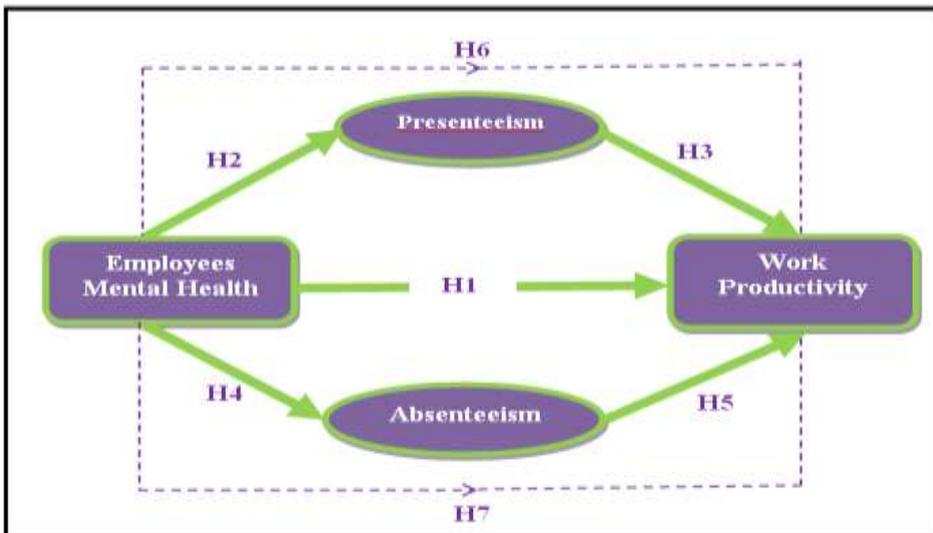


Figure.1 The proposed model for hypothesis testing

4. Research methodology

4.1 Data collection and sampling

This is a survey study through a random sampling technique, in which data were collected at one point of time. The study population consists of all medical and nursing staff at the Governmental hospitals in Qalyubia Governorate, the Governmental hospitals in Qalyubia Governorate include 10 hospitals with 15844 medical and nursing staff (CAMPAS, 2022 p53:55). The present study relied on online sampling calculator, to determine the sample size, so the sample size was 376 participants. 400 questionnaires were distributed with both English and Arabic versions, through personal visits. Data collection took around three months. We received 384 questionnaires, the next stage involved cleaning data, which is an essential part of the process as the occurrence of erroneous or inconsistent data can considerably affect the outcomes of the analysis (Hellerstein, 2008). The number of complete and usable responses is 374 out of 376 responses, with a response rate of 93.5%. Accordingly, the analysis was based on a sample of (374) responses.

4.2 Constructs and Measurement items

We adopted a five-point Likert-type scale ranging from 1=strongly disagree to 5=strongly agree. The mental health construct was measured with nine items adapted from (Lukate et al., 2016). The presenteeism was measured with three items adapted from (Li et al., 2019; and Lu et al., 2013). The

absenteeism was measured with three items adapted from (Lokke, 2022). The productivity was measured with six items with two dimensions represented by work completing and avoiding distraction that adapted from (Bhatti & Qureshi, 2007; De Been et al., 2016; Lee & Brand 2006), which was originally compiled by (Koopman et al., 2002). See appendix (A).

4.3 Respondents' profile

As shown in Table.1, the Sample Characteristic, based on which approximately 67.4% of the respondents are Female (n=252) and 32.6% are male (n=122). Approximately 15.2% of the respondents ≤ 25 years (n=57), and 34.2% in the age range of 26-30 (n=128), 50.6% above 31 years (n=189). About 41.7% of respondents are Unmarried (n=156), 37.7% Married with children (n=141), 20.6% Married without children (n=77), 65.0% College and below (n=243), and 35.0% are Bachelor and above (n=131). Regarding the Tenure, 36.6% \leq five years (n=137), 48.9% from six to ten years (n=183) and 14.5% above eleven years (n=54). Finally, According to the responses occupation, 23.8% are Doctors (n=89), 20.6 are Pharmacists (n=77), 55.6% Nurses (n=208).

Table.1 Sample Characteristic

Characteristic	Frequency (N=374)	Percentage %
Gender		
Male	122	32.6
Female	252	67.4
Age		
≤ 25	57	15.2
26 to 30	128	34.2
≥ 31	189	50.6
Marital		
Unmarried	156	41.7
Married with children	141	37.7
Married without children	77	20.6
Education		
College and below	243	65.0
Bachelor and above	131	35.0
Tenure		
≤ 5	137	36.6
6 to 10	183	48.9
≥ 11	54	14.5
Occupation		
Doctors	89	23.8
Pharmacists	77	20.6
Nurses	208	55.6

4.4 Data Analysis

4.4.1 data analysis methods

In this study, we used partial least square structural equation model (PLS-SEM) using Smart PLS V.4 software to test both the

measurement and structural models (Becker et al., 2013; Ringle et al. 2005). The reasons for using PLS-SEM are: The possibility of testing complex relationships with small samples and parameter estimates can be estimated with the violation of normality assumption (Goodhue et al. 2012). In addition PLS-SEM is preferred instead of Covariance based-Structural Equation Modeling (CB-SEM), because CB-SEM is used for Conforming the model (Gefen et al. 2011; Hair et al., 2018). The PLS path models contain two sets of linear equations; the measurement model (known as the external model) and the structural model (the internal model). While the former defines the relationship between a construct and its observed indicators, the latter describes the relationships between constructs (Henseler et al., 2015). The research model was tested based on a two-step approach (measurement and structural model) recommended by Anderson and Gerbing (1988).

4.4.2 Validity, Reliability and Descriptive Statistics

The measurement model was assessed to determining internal consistency, discriminant and convergent validity (Fornell and Larcker, 1981; Hair et al., 2017). Table.2 and Figure2 shows that all loading coefficients for items that measure the same construct overstepped the acceptance criterion of 0.7 (Hair et al., 2016) except for (WP-4) of Productivity, so it removed from the analysis. These results indicate that the measurement model have good reliability of the individual items.

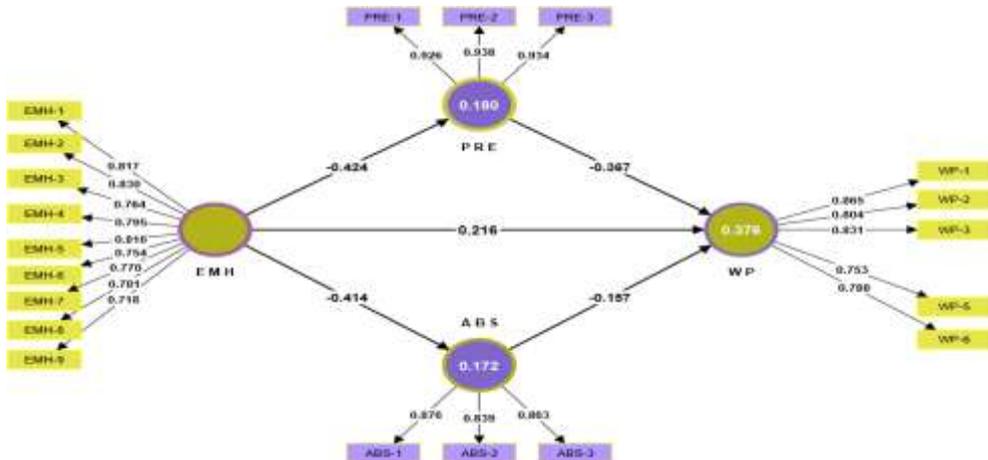


Figure.2 Measurement Model

Figure.2 shows the model after removal of loadings less than 0.7. The results indicate that a for all study variables is higher than 0.7 (ranged from 0.718 to 0.938), whereas the results of Rho-A coefficients confirmed for all the study variables as significant and statistically acceptable because it is greater than 0.70 (ranged from 0.833 to 0.926). The CR for all constructs (range between 0.895 and 0.953) also exceeded the acceptance criterion of 0.70 (Ramayah et al., 2018), indicating that all constructs have adequate internal consistency reliability. Convergent viability is accomplished when the AVE of each construct represents at least 50% of the indicators' variance (Hair et al., 2017; Straub et al. 2004). Table.2 indicates that AVE values are (ranged from 0.614 to 0.870) for all constructs that overstepped the recommended threshold of 0.5, which denotes that all the constructs of the measurement model have adequate convergent validity. In

addition, the results show that all Cronbach's alpha coefficients are acceptable, while values greater than 0.70 indicate a high degree of reliability. (Hair, et al., 2016) sees that the acceptable alpha values range (0.60: 0.70).

Table.2 Measurement items loadings, reliability and convergent validity

Construct	No. of items	Items	loading	(α)	Rho-A	(CR)	AVE
EMH	9			0.921	0.922	0.935	0.614
		EMH-1	0.817				
		EMH-2	0.830				
		EMH-3	0.764				
		EMH-4	0.795				
		EMH-5	0.816				
		EMH-6	0.754				
		EMH-7	0.770				
		EMH-8	0.781				
EMH-9	0.718						
PRE	3			0.925	0.926	0.953	0.870
		PRE-1	0.926				
		PRE-2	0.938				
ABS	3			0.824	0.833	0.895	0.739
		ABS-1	0.876				
		ABS-2	0.839				
WP	5	After remove (WP-4)		0.867	0.868	0.904	0.655
		WP-1	0.865				
		WP-2	0.804				
		WP-3	0.831				
		WP-4	0.682				
		WP-5	0.753				
WP-6	0.788						

According to the foregoing, the discriminant validity was tested by square root of (AVE) and the results are shown in the table.3. It

is clear that AVE square root values are accepted, as all the correlation coefficient of its variables and dimensions itself is greater than their correlation with other in the research variables, therefore the construct validity of the research measures is proved.

Table.3 Descriptive Statistics and Discriminant validity analysis

Construct	Mean	Standard deviation	EMH	PRE	ABS	WP
EMH	3.41	0.65	0.784			
PRE	2.70	0.84	-0.424	0.933		
ABS	2.92	0.85	-0.414	0.647	0.860	
WP	3.98	0.44	0.437	-0.560	-0.484	0.809

Note: N=374.

All correlation coefficients are significant at the level of $P \leq 0.001$.

The Square Root of AVEs the boldface numbers on the diagonal line.

The discriminant validity is obtained by taking the square root of AVE of all the constructs, which must be greater than the correlations of the remaining constructs (Fornell et al., 1981). The calculated results are provided as the square root of AVE of EMH (0.784), PRE (0.933), ABS (0.860), and WP (0.809), which indicates discriminant validity.

4.4.3 Structural Model Testing

To test the structural model, two types of relationships are required: the direct and indirect effect of mental health, Presenteeism and Absenteeism on Productivity. The path coefficient represents the strength of the relationship between two latent constructs. The path co-efficient must exceed .1 to

influence its endogenous construct (Urbach and Ahlemann 2010). The direct and indirect effects of the structural model are presented in Tables 4 and 5 respectively.

Four criteria were used to assess the structural model. These criteria include regression beta (β) weights including direct and indirect effect, coefficient of determination (R^2), Predictive relevance (Q^2), and the global goodness of fit (GOF) Goffin (2007). The parameter estimates were estimated using the bootstrap procedure recommended by Henseler et al. (2009). The reason for using bootstrap procedure is that PLS-SEM assumes data to be non-normally distributed (Hair et al. 2011).

The co-efficient of determination (R^2) for the research model is given in Figure3. The co-efficient of determination for Productivity is 0.376. The entire Parallel mediation model explains 37.6% of the variance from its antecedents and mediators. Similarly the R^2 for Presenteeism and Absenteeism were 0.180 and 0.172 respectively.

The predictive relevancy (Q^2) of the model was assessed, where the predictive relevance of the manifest variables to its latent construct was assessed through Q^2 measure. The index of Cross Validated-Redundancy is used to represent the Q^2 measure. The predictive relevance value above zero ($Q^2 > 0$) is considered acceptable (Chin 2010). For the present model the Q^2 value (Presenteeism = 0.175, Absenteeism = 0.165, Productivity

= 0.185). Overall, all the values were within the cut off limit. Hence the model had predictive relevance.

Global goodness of fit (GOF) is the square root of average of AVE and multiplied with square root of average R² for endogenous variables (Tenenhaus et al. 2005). GOF is used to determine the predictive power of the model. The GOF is computed using the following formula:

$$GOF = \sqrt{AVE} \times \sqrt{R^2} = 0.848 \times 0.493 = 0.418$$

The GOF value for the present model was 0.418; our model had better explaining power than the baseline values (GOF Small = .10, GOF Medium = .25, GOF Large = .36). It also provided adequate support to validate the PLS model globally (Wetzels et al. 2009).

The effect size of the PLS-SEM can be assessed using the Cohen's f^2 (Cohen 1988). This can be obtained by a change in the co-efficient of determination R², whether an exogenous latent construct has substantial influence on endogenous latent constructs. Thus, the change was computed with the exogenous latent variable and without the exogenous latent construct. In the present research model the overall effect size was 0.426 (excluded mental health). It can be concluded that mental health had substantial influence on productivity via Presenteeism and Absenteeism.

4.4.3.1 Structural model assessment of direct relationships

The effect of mental health on Productivity has been explored directly as well as indirectly through Presenteeism and Absenteeism. Seven paths have been traced (Figure3) and the

results revealed that all the paths explored in the model are significant, which the direct effect of Mental health on Productivity where ($\beta=0.216$, $STDEV=0.040$, t value =5.350, $p<0.001$), see (Figure.3 and Table.4). *The first hypothesis was supported, which mean, employees mental health positively associated with work productivity.*

The second path traced the direct relationship between mental health and Presenteeism. The standardized regression weight for the relationship between mental health and Presenteeism ($\beta=-0.424$, $STDEV=0.036$, t value=11.689, $p<0.001$), is significant which mean that higher the mental health lower is the degree of Presenteeism. *The second hypothesis was supported, which mean, employees mental health negatively associated with presenteeism.*

The third path traced the direct relationship between Presenteeism and Productivity which is also negative ($\beta=-0.367$, $STDEV=0.060$, t value =6.148, $p<0.01$), which indicating that higher the Presenteeism lower is the Productivity. *The third hypothesis was supported. Which mean, Presenteeism negatively predicts work productivity.*

The fourth path reflected that mental health significantly affects the Absenteeism ($\beta=-0.414$, $STDEV=0.040$, t value=10.293, $p<0.001$), *the fourth hypothesis was supported, which indicating that higher the Mental health lower is Absenteeism.*

Further, the fifth path reflected that the Absenteeism significantly affects the Productivity ($\beta = -0.157$, $STDEV = 0.055$, t value = 2.842, $p < 0.01$), the fifth hypothesis was supported, which indicating that higher the Absenteeism lower is the work Productivity.

Table.4 Path coefficients of the structural model (direct relationships)

Hypothes	Direct effect	Beta	STDEV	t values	P-values	Decision
H1	EMH -> WP	0.216	0.040	5.350	0.000	Supported
H2	EMH -> WP	-0.424	0.036	11.689	0.000	Supported
H3	PRE -> WP	-0.367	0.060	6.148	0.000	Supported
H4	EMH -> ABS	-0.414	0.040	10.293	0.000	Supported
H5	ABS -> WP	-0.157	0.055	2.842	0.004	Supported

Beta = regression weight, STDEV = Standard deviation, t values are computed through bootstrapping procedure with 374 cases and 5000 samples

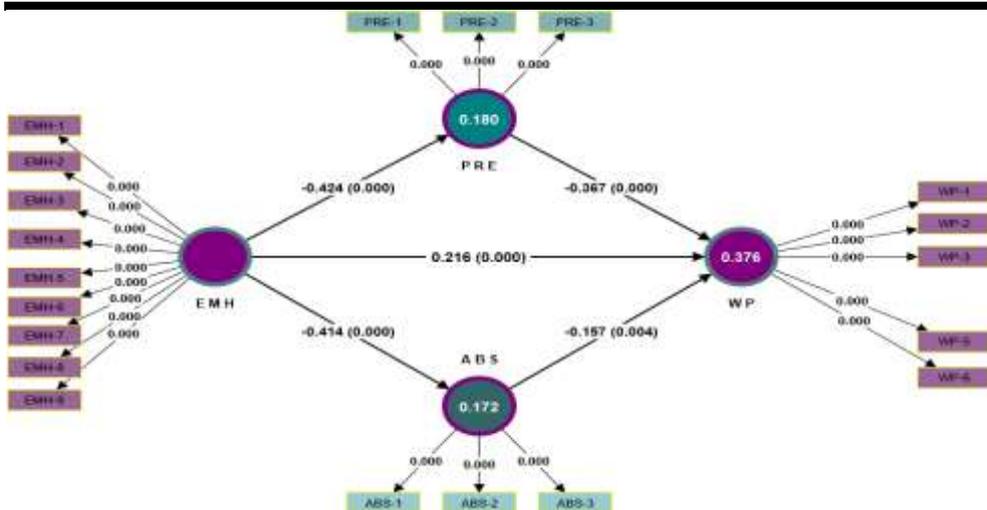


Figure.3 Structural model

4.4.3.2 Structural model assessment of mediating effect

This mediation approach was tested using bootstrapping procedure, because it is more efficient than the Sobel's test procedure for testing indirect effects (Preacher and Hayes 2004). In Table.5, we provide estimates of the indirect effects, along with the symmetric and 95% bias corrected bootstrapped confidence intervals for our path estimates. Figure3. Also identifies the estimates from the structural path coefficients.

Indirect effects were tested using the bootstrapping procedure with 5000 bootstrap samples, Further for checking the significance of indirect relationship between Mental health and Productivity through Presenteeism, which indicates that the relationship is significant (Mental health -> Presenteeism -> Productivity = Indirect effect= 0.156, STDEV = 0.028, t value= 5.553, LLCI= 0.102, ULCI= 0.210, $p < 0.001$). Thus, it supports the sixth hypothesis that Presenteeism mediates the relationship between mental health and productivity. Likewise, the significance of indirect relationship between Mental health and Productivity through Absenteeism indicates that the relationship is significant (Mental health -> Absenteeism -> Productivity = Indirect effect= 0.065, STDEV = 0.025, t value=2.559, LLCI= 0.022, ULCI= 0.121, $p < 0.05$).it supports the seventh hypothesis.

Table.5 Mediation analysis result

Hypot heses	Indirect paths	Beta	STDE V	t value	LLCI 2.5%	ULCI 97.5%	P value	Decisio n
H6	EMH ->PRE ->WP	0.156	0.028	5.553	0.102	0.210	0.000	Supported
H7	EMH ->ABS ->WP	0.065	0.025	2.559	0.022	0.121	0.011	Supported

STDEV = Standard deviation, LLCI=Lower Limit Confidence Interval, ULCL=Upper Limit Confidence Limit

5. Discussion of results

Guided by the COR theory, we sought to explore the mediating role of presenteeism and absenteeism in the relationship between mental health and productivity. The mediators have to be examined to investigate such mechanisms, which play an important role in conveying medical and nursing working staff's mental health effect on their productivity. Our study tries to fill this gap with a question: what are the mechanisms for medical and nursing staff to enhance productivity through mental health?

First of all, the empirical evidence introduced by the recent study confirmed the positive and significant effect of mental health on productivity. Our result is consistent with (Keyes, 2002; Aquino et al., 2020), who showed that higher positive MH result in higher job performance and greater productivity. Others confirm that mental illness has a negative effect on workers' productivity that lead to high economic costs (Hennekam et al., 2020; Bubonya et al., 2017). In the same direction, Oliveira et al., (2023) & Bouwmans et al., (2014) emphasized that poor MH was associated with productivity loss, these inconsistencies in findings are due to the differences in

literature orientations that represented in positive MH perspective and MH disorders/problems.

While the results of the analyses show that MH has a negative and significant effect on presenteeism. The result of our study confirms the result presented by (Dutton et al., 2011; Berry et al., 2021) on the impact of positive mental health (PMH) supported by workplace culture and positive job environments that negatively associated with presenteeism. On the other hand, Hirsh et al., (2017) revealed that health disorders causing employees decreased work hours and presenteeism, which is also similar to the finding of Berry et al., (2021) which asserted the positive association between MH stigma and presenteeism. In the same direction, Bryan et al., (2022) affirmed that poor physical and mental health significantly predict the dysfunctional presenteeism.

As well, the results emphasize the negative and significant effect of MH on absenteeism. The findings support the argument that greater employee MH is a substantial predictor for lower employee voluntary and /or involuntary absence. While, others demonstrate the positive association between the presence of MH problems and absenteeism (Suzuki et al., 2015; Albion, 2008), which is also similar to the result of Buist-Bouwman et al., (2005) which showed that both the physical and mental problems were related to an additive raise in absenteeism.

Moreover, the finding of the current research clarifies that presenteeism has a negative and significant effect on work

productivity. Our result is consistent with (Aronsson & Gustafsson, 2000; Hirsh et al., 2017; Arnold, 2016; Conway et al., 2016), who showed that presenteeism has a negative effect on productivity through health conditions. However, our study findings different from the findings of Nowak et al., (2022); Li et al., (2019), which revealed the significant and positive relation between presenteeism and health-related productivity loss. Most of the prior research on presenteeism has almost focused on the outcome emphasis (Bouwman et al., 2017; Aronsson & Gustafsson's, 2000), while the current study addressed the presenteeism in the definition and measurement as a behavior.

Furthermore, the results of the analysis show that absenteeism has a negative and significant effect on work productivity. The result of our study confirms the result asserted by (Li et al., 2019) on the impact of the level of employee absence that was significantly associated with individual's productivity. This conclusion is in line with Lokke, (2022), who have found that both voluntary absence and involuntary absence have a negative relation to job performance and productivity at work. Indeed, this result is consistent with the findings of the study by (Tangchareonsamut, 2021) that indicated the prevalence of sickness absence and nonsickness absence were significantly associated with increased odds of poor work performance.

Finally, this study confirmed and showed the mechanism through which medical and nursing staff working can enhance

productivity. Presenteeism and absenteeism were identified as mediators in the relationship between mental health and productivity of medical and nursing staff.

Notably, presenteeism partially mediates the impact of MH on productivity. The results of this study agree with the results of study by Komp (2022), which found that presenteeism mediates the association of health-promoting collaboration to well-being, in addition to a study by Jia, (2022), which showed that health status affects the task performance through presenteeism at medical staff in China, and the study by Liao et al., (2023) recently, which affirmed that presenteeism is partially mediated the association between psychological detachment and post-traumatic stress disorder. Moreover, the results of recent study are partially consistent with the results of Costa (2020), which showed that presenteeism mediates the association between psychological factors at work and common mental disorders in nursing personnel at public hospitals in Brazil.

Further still, absenteeism partially mediates the effect of MH on productivity. The findings of this study are consistent with a study by (Mac Gregar & Cunningham, 2018) which analyzed the impact of supervisor support on employee current health through the mediating effect of absenteeism, in addition to a study by (Hale & Viner, 2018), which revealed that absenteeism significantly mediates the effect of mental health on physical health and later outcomes, (Bouwman et al., 2014), which

showed that depression and anxiety indirectly affects productivity losses throughout the mediating role of absenteeism.

6. Research recommendation

Some recommendations would be suggested to medical and nursing staff working at the Governmental hospitals in Qalyubia Governorate based on the aforementioned findings as follows:

- This study suggested that managers in Governmental hospitals should employ workplace positive MH practices and policies to reduce the frequency of employees' presenteeism as well as absenteeism, and hence decreasing productivity loss.
- Hospital administrators should consider intervention programs to enhance work performance among workers with sickness absence and presenteeism.
- Human resource management should make strategies to create a healthy and less stressful environment in the workplace and identify the improvement areas.
- We suggest that managers in the medical and health areas should be fully aware of the negative effects of presenteeism on their staff, health and work performance, particularly in a society that characterized with hard work and overtime work, for example healthcare sector in Egypt society.
- The medical and health manager should initially pay attention to the prevention of employees' presenteeism, by establishing a multi-dimensional performance appraisal system, with focus on

the quality of work instead of the frequency rates of presence in the workplace.

- Medical and health managers should setting up an effective mechanism of appropriate procedures that decrease rates of absenteeism which will consequently decrease organizations' costs.
- It is recommended that the management of hospitals should focus on best practice guidelines and workplace benefits, which support employees suffering with MH disorders for enhancing the quality of work life that result in reduced absenteeism, disability, and productivity loss.

7. Future research

Based upon the study's results, the following recommendations for future research are suggested:

- Investigating the dynamics of the relationship between mental illness and worker productivity so as to, recognize the trade-offs among presenteeism and absenteeism.
- Investigating the approach motives that can be examined as a moderator of the relationship between presenteeism and MH outcomes.
- We encourage researchers in future studies to investigate directional and moderator effects using different samples, measure, and data collection to generalize our results.

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Appendix (A)

Dear: doctor/ Nurse (Please don't write your name).

This questionnaire is only prepared for academic research purposes. Hence, your Responses will be kept anonymously and confidentially and will only be used for research purposes.

Please mark (√) for the best suits your degree of agreement or disagreement in the following items listed below:

NO	items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
1	I enjoy my life					
2	All in all, I am satisfied with my life					
3	In general, I am confident					
4	I manage well to fulfill my needs					
5	I am in good physical and emotional condition					
6	I feel that I am actually well equipped to deal with life and its difficulties					
7	Much of what I do brings me joy					
8	I am a calm, balanced human being					
9	I enjoy my life					
10	Although you feel sick, you still force yourself to go to work					
11	Although you have physical symptoms such as headache or backache, you still force yourself to go to work					
12	Although you have health problems, you still force yourself to handle with work stress					
13	Because of my physical symptoms like (neck pain or lower-back pain..etc), I absent from my job					

Employees Mental Health and Work Productivity: The Mediating Role ...

Dr/ Sameh Mohamed mohamed said & Dr/ Dina Abou-bakr Mohammed Mahmoud& Dr/ Doaa Gamal El-din Ali Nasser

14	Because of my psychological symptoms like (overstrain or fatigue or psychiatric disorders ...etc), I absent from my job					
15	My absence reason, because I just not being in the mood to work, without being ill					
16	Despite having my health problem, I was able to finish hard tasks in my work					
17	Although my health problem, I am responsible for completing work on time					
18	However, having my health problem, I always maintain the quality of work					
19	Although my health problem, I always take care to be productive					
20	My health problem distracted me from taking pleasure in my work					
21	I felt hopeless about finishing certain work tasks, due to my health problem (-)					

Please fill in the following information

Gender Male () Female ()
Age/year ≤25 () 26-30 () ≥ 31 ()
Marital status Unmarried () Married with children () Married without children ()
Educational level College and below () Bachelor and above ()
Tenure ≤ 5 () 6 – 10 () ≥ 11 ()
Occupation Doctors () Pharmacists () Nurse ()

Thank you very much for your cooperation