The Interplay Between Insomnia and Depression

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Depression and insomnia are two psychiatric disorders which afflict much of the world’s population. More interestingly, these two disorders occur in conjunction quite frequently. As the body of knowledge regarding these two disorders increases, researchers are discovering more about the complex interaction between these two disorders. This review aims to examine each disorder and synthesize much of the research regarding the interaction between them. In addition, some treatments and interventions which have contributed to our knowledge of the interaction between depression and insomnia will be discussed.

To have a complete grasp on the interaction between these two disorders, one must have a basic understanding of each disorder on its own. Major depressive disorder, according to the American Psychiatric Association (2013), is characterized by the absence of pleasure or interest in life and everyday activities lasting at least two weeks. A few indicators of this include depressed mood, fatigue, feelings of worthlessness, lowered ability to concentrate and thoughts of death. Especially relevant to this review, however, is that the American Psychiatric Association (2013) lists insomnia as one of the indicators of depression.

Additionally, the American Psychiatric Association (2013) has specific criterion for identifying insomnia. A general definition of insomnia, according to the DSM V, is having difficulty initiating or maintaining sleep for at least one month (American Psychiatric Association, 2013). Also relevant to this review is that the DSM V indicates that insomnia leads to many daytime impairments such as decreased concentration, irritability, fatigue, decreased motivation, and reduced performance or motivation. Interestingly, many of the indicators and symptoms of insomnia are the same as those for depression.
For many years, insomnia has been listed as a possible symptom of depression (American Psychiatric Association, 2013). However, relatively recent research has been investigating depression as a result of insomnia (Breslau, Roth, Rosenthal, & Andreski, 1996) (Batterham, Glozier, & Christensen, 2012) (Batterham, Glozier, & Christensen, 2012) (Baglioni, Battagliese, Feige, Spiegelhalder, Nissen, Voderholzer, & ... Riemann, 2011). In this way, the direction of the relationship between insomnia and depression could be very different than previously thought. The next portion of this review will focus on studies which have found evidence of insomnia being a precursor to depression.

El-Sheikh, Bub, Kelly, & Buckhalt (2013) sought to examine the causal relationship between insomnia and depression. These researchers theorized that children with sleep problems present at an initial examination would show higher rates of depressive symptoms at a later examination. To test this theory the researchers followed children across three years, gathering measures of sleep problems and depression at each interval.

For this longitudinal study, measures were taken at one year intervals over a period of three years. At time one, time two, and time three children completed the Children’s Depression Inventory, the Revised Children’s Manifest Anxiety Scale, the Trauma Symptoms Checklist and the Sleep Habits Survey. This review is most interested in the measures taken by the Children’s Depression Inventory and the Sleep Habits Survey.

The results of this study lend much support to the notion that insomnia can be a precursor to depression. El-Sheikh, Bub, Kelly, & Buckhalt (2013) found that children who had poor sleep habits at time one had elevated levels of depressive symptoms at time two and time three. Taken
at face value, this could indicate that a lack of sleep causes depression. However, this would be a gross overgeneralization of these results. While the researchers did take measures of sleep habits, a formal diagnosis of true insomnia was not used. The researchers did test for depressive symptoms using the Children’s Depression Inventory. While this test is a reliable measure of depressive symptoms in children, it also is not used to formally diagnose major depressive disorder in children as this disorder is generally only diagnosed in young adulthood or beyond. Finally, one should be very careful of generalizing these results to the entire population. This was a study examining how sleep habits affected later adjustment in children. While poor sleep habits and depressive symptoms were shown to be correlated, neither insomnia nor major depression was formally diagnosed. However, this study does provide some insight as to how sleep quality affects later mood regulation.

Perhaps more convincing than the previous study is a study conducted by Breslau, Roth, Rosenthal, & Andreski (1996). These researchers examined the prevalence of insomnia and its influence on other psychiatric disorders in a sample of 1,200 young adults. At a three year follow up, 1,007 of the original participants responses were recorded. At both times, participants were evaluated and diagnosed according to the DSM-III-R.

The results of this study are significant. Breslau, Roth, Rosenthal, & Andreski (1996) found that those with insomnia at the initial screening had slightly over twice the chance of developing major depressive disorder by time three. This is significant in demonstrating that insomnia can often be a strong predictor of future depression.
Additionally, the results of this study are reliable for a few reasons. First, this study has a fairly substantial sample size. This means that the results should be more generalizable. Also, unlike many studies that just measure the symptoms of insomnia or depression, this study relied on an actual diagnosis of these disorders according to the DSM-III-R. Finally, the researchers accounted for the fact that insomnia and depression have many symptoms which overlap, which may contribute to the diagnosis of the other. This means that the correlation from insomnia to depression was still present even when the diagnosis of depression was based off of other symptoms than sleep disturbance. Ultimately, this study provides good evidence that insomnia is a predictor of major depression.

Further research on this topic was conducted by Batterham, Glozier, and Christensen (2012). This longitudinal study followed 3,636 young and middle aged adults for four years. At both screenings participants completed tests of mental disorders, sleep disturbance, and measures of personality style. While these researchers were examining the effects of insomnia on depression, they also sought to examine how personality style may mediate insomnia and depression.

The primary findings of this study revealed that major depressive disorder is very often preceded by sleep disturbances. While this is useful information, this still does not necessarily imply a causal relationship from insomnia to depression. As the authors of this study suggested, an underlying factor such as personality style could be influencing the development of both insomnia and depression (Batterham, Glozier, & Christensen, 2012).
While this study may not have been able to determine the presence of a causal relationship, it is still well designed and provides reliable results. The sample size in this study was very substantial and participants were randomly selected from electoral ballots in several major Australian cities. Furthermore, the measures for mental disorders were taken from the DSM-IV. While participants were not formally diagnosed, their depressive symptoms were evaluated based on the criteria in the DSM-IV, adding to the validity of their measures. Considering the sound sampling procedure and the valid measures taken, this study seems to provide evidence that insomnia is a precursor to depression.

The studies discussed thus far have provided evidence that insomnia is a good predictor of depression. Further supporting this, there are many more studies which have revealed similar findings. Baglioni et al. (2011) conducted a meta-analysis of the literature indicating that insomnia predicts or precedes depression. This study searched four of the main databases of psychological research for longitudinal studies which investigated this phenomenon. The researchers found twenty-one studies which met this criterion. Data from these studies were then compiled and analyzed.

The results from this meta-analysis reveal that individuals with insomnia are at slightly over twice the risk for developing depression than are individuals without insomnia. In addition, individuals with better sleep habits than the general population are at a lower risk of developing depression than the general population. Interestingly, this meta-analysis also found that those with insomnia are at a higher risk for depression in all age groups, including children and the elderly (Baglioni et al., 2011).
The results of this meta-analysis seem to be reliable. Several precautions were taken in analyzing the data to prevent misinterpretation. For example sample size, follow up period, and criterion for diagnosis were all considered when compiling the data. Studies with low sample size or lacking operational definitions of disorders were excluded. In addition, publication biases were taken into account by assessing a funnel plot. The authors determined that publication bias did not have a significant impact on this meta-analysis (Baglioni et al., 2011).

As has been displayed, there is a considerable amount of research suggesting that insomnia is a risk factor for developing depression. However, it has still not been shown that insomnia causes major depression. It has only been shown that insomnia is strongly correlated with the later development of major depression. Others, however, suggest that insomnia may result from depression. While the support for this is not as strong, it is important to note.

For many years, versions of the DSM (American Psychiatric Association, 2013) have listed insomnia as one of the symptoms of major depression. Intuitively, this seems to indicate that insomnia results from major depression. However, it is not nearly as well documented that insomnia stems from depression as it is that depression stems from insomnia.

One study that does seem to support this was conducted by Gillespie et al. (2012). This study examined a sample of 7,235 twins from all age groups. This sample was then split into two groups by age. This was done so that the older group could be used as an analog for the younger group when examining the development of depression and insomnia over time. The participants filled out several surveys which included measures of health, personality, disorders, stressors, and sleep quality. The responses from these surveys were then compiled and analyzed.
Gillespie et al. (2012) found that in older individuals, there did not seem to be a causal relationship between insomnia and depression. Rather, their results indicated that insomnia and depression are reciprocally related, meaning that both disorders were shown to predict the other. Interestingly, however, Gillespie et al. (2012) found that in younger individuals, depression had a causal relationship to insomnia. Furthermore, this study found no evidence suggesting that insomnia causes depression.

The findings of this study are surprising in light of all of the research which indicated that insomnia predicts the onset of depression. While insomnia has been shown to predict depression, this study posits that there is no evidence for a causal relationship. Rather, this study suggests quite the opposite in that depression was shown to cause insomnia. This is difficult to reconcile, as many studies seem to be producing opposing results. One possible suggestion is that insomnia is indeed a symptom of depression, but manifests itself much earlier than the other depressive symptoms (Riemann & Voderholzer, 2003). In this way, insomnia would appear as if it caused depression when in actuality it is just an early symptom of depression. Of course, this is just speculation and more research is needed to determine the direction of this relationship.

Another theory is that the interaction between insomnia and depression is bi-directional. This would imply that neither disorder causes the other, but rather that these two disorders perpetuate each other. Under this model, it would not matter if depression or insomnia developed first. Simply possessing one of these disorders would greatly increase an individual’s chances of developing the other.
Silvertsen et al. (2012) conducted a study to examine this bi-directional relationship. This study included a sample of 24,715 participants who responded to all three questionnaires. Measures of insomnia and depression were collected based on the criterion for these disorders outlined in the DSM-IV. The variable of interest in this study was the presence of either depression or insomnia at a follow up in participants who reported the other disorder at the initial screening.

The results of this study are quite astonishing. For participants who had insomnia at time one and time two, the risk of depression at time three was over four times higher than for those with no sleep disturbances. Similarly, for those with depression at time one and time two, the risk of insomnia at time three was also over four times higher (Silvertsen et al., 2012). This indicates that insomnia and depression can both be seen to predict the other, implying that there is a bi-directional relationship between the two disorders.

The results of this study do seem reliable. The first strength is the huge sample size of 24,715 participants. This does suggest that the results are quite generalizable. In addition, the authors accounted for various other factors which could influence results such as age, sex, education, and the presence of other disorders. This study provides good support for the presence of a bi-directional relationship between insomnia and depression.

Further supporting this bi-directional relationship between insomnia and depression was a study conducted by Roberts and Duong (2013). This study was modeled similarly to the Silvertsen et al. (2012) study, with only a few differences. First, the sample size was much smaller and comprised only of individuals aged eleven to seventeen. Second, instead of two
follow ups, there was only one. Like the previous study, Roberts and Duong (2013) assessed insomnia and depression according to the DSM-IV.

Though the design of the study was slightly different, Roberts and Duong (2013) also found that depression or insomnia could be shown to predict the other. However, instead of individuals with one disorder being at four times the risk for developing the other, this study found that individuals with one disorder were between two and three times more likely to develop the other disorder. While these results differ slightly, this study still provides support that insomnia and depression influence each other about equally.

Another way to examine the relationship between insomnia and depression is to study the treatment of these disorders rather than the onset of these disorders. In one study, four participants with both insomnia and major depression underwent a several week trial therapy for the treatment of insomnia. The researchers found that reductions in sleep disturbances were associated with reductions in depressive symptoms (Maroti, Folkeson, Jansson-Fröjmark, & Linton, 2012). While this study had a very small sample size and the results are not generalizable, this does provide preliminary evidence that treating insomnia may help in treating depression as well.

In a similar study, researchers examined how the treatment of depression affected insomnia. The results of this study were quite different than that of the Maroti et al. (2012) study, however. In this study, insomnia remained present even after the treatment of major depression (Carney, Harris, Friedman, 2011). These results are puzzling considering the results of the Maroti et al. (2012) study. It is still unknown why the treatment of insomnia decreases depressive
symptoms, but the treatment of depression does not decrease insomnia. Perhaps it is the case that insomnia is at the root of both disturbances, but this seems unlikely given the research on the bi-directional relationship between insomnia and depression.

To reconcile this, some researchers have begun to theorize about factors that may lie at the root of both. One theory is that an individual’s underlying personality style may mediate both insomnia and depression (Batterham, Glozier, & Christensen, 2012). Under this model, a personality that tends towards ruminative or neurotic thought patterns may be more susceptible to both insomnia and depression. In this case, insomnia and depression would develop independently, but appear to be correlated as they stemmed from the same negative thought patterns (Batterham, Glozier, & Christensen, 2012).

Similar to this theory, Sadler, McLaren, and Jenkins (2013) propose that negative beliefs about sleep and hopelessness could mediate the relationship between insomnia and depression. These researchers suggest that the negative beliefs associated with depression might have a detrimental impact on an individual’s sleep. Conversely, the fatigue associated with insomnia could contribute to depressive symptoms. There are many theories that attempt to explain why insomnia and depression are so intertwined, but more research is needed to accurately identify these factors.

Our body of knowledge regarding the interaction of insomnia and major depression has expanded significantly in the past few decades. However, we still do not have an accurate model as to how they interact. The majority of research we have available to us now primarily looks at insomnia as a precursor to depression. However, many researchers are now recognizing that this
is not a one way relationship, and that depression and insomnia can be seen to predict each other equally well. Research on treatments has confounded this relationship further, as treating one disorder does not always seem to have the same effect on the other. Finally, this has spurred many researchers to begin theorizing about underlying factors that are influencing both insomnia and depression, such as personality style and beliefs. Further research is needed to fully understand this relationship.

References


