Stepped Care for Insomnia: An Evaluation of Implementation in Routine Practice

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Study Objectives: Stepped care models for chronic insomnia are in their infancy. This study evaluated predictors of movement in a stepped care pathway using a sample of 50 adult outpatients with chronic insomnia.

Methods: At assessment periods, participants completed daily sleep diaries, the Insomnia Severity Index, the Multi-Dimensional Fatigue Inventory (MFI), and the Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-10). Following this, data were collected regarding whether the individual went on to receive more intensive services (i.e., individual consultation, group or individual therapy). Data were analyzed using multinomial logistic regression.

Results: Results showed that age, employment status, and sleep (quality, latency) predicted use of more intensive services. Results showed that psychiatric and sleep comorbidity, sleep attitudes, and insomnia severity did not.

Conclusions: Implications of these findings are that stepped care resulted in a 69% improvement in efficiency, and that low-intensity treatment delivered in step 1 may have been particularly sufficient for the young and employed, and for those with better sleep.

Keywords: Stepped care, insomnia, computerized treatment

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Insomnia is a chronic condition for 10% of the adult population¹ and has been described as an international public health problem.² Far from being just a nuisance, individuals with insomnia disorder are at increased risk for stroke,³ diabetes,⁴ obesity,⁵ alcohol abuse,⁶ depressive episodes,⁷ automobile accidents,⁸ and workplace absenteeism.^{9,10} Given the scope of the insomnia problem, several researchers have discussed the utility of providing stepped care to meet the massive population need.^{2,11} One of these papers described a proposal for a stepped care model,² which will now be reviewed, following which an alternative model currently in use will be outlined.

Espie Model

Espie proposed a 5-level, stepped care model for insomnia.² The levels differed in terms of provider (e.g., graduate student, psychologist, nonspecific therapist) and cost, but not content. In Espie's proposed model, the lowest intensity intervention was self-administered cognitive behavioral therapy (CBT), either by booklet, CD/DVD, or internet. The next step in this model was a small group manualized brief CBT delivered by a trained therapist, following which individual or small group CBT delivered by a graduate psychologist would be offered. The next step up Espie's proposed hierarchy was the opportunity to receive individual CBT by a clinical psychologist. The final step was to receive "expert CBT" by a behavioral sleep medicine specialist. Espie proposes that there be iterative assessment and review to ensure that progression through steps and the decision of where to begin in the stepped care model be appropriate. An important commentary on this model challenged the sleep community to identify features that might match individuals to a particular entry step (e.g., comorbid sleep, medical, or psychiatric conditions, low levels of sleep self-efficacy, cognitive deficits).¹¹

BRIEF SUMMARY

Current Knowledge/Study Rationale: This study sought to examine whether the introduction of a stepped care model improves the efficiency of care for those with insomnia. A second purpose was to determine predictors of "stepping up" and "stepping down" in such a model.

Study Impact: Results of this study show that stepped care is viable in the treatment of chronic insomnia and produces significant improvements in efficiency. Results show that the presence of comorbid conditions is not associated with more intensive service receipt.

Vincent Model

The model under study which has been in use since 2009 contains 4 levels (see **Figure 1**). It has been employed in a behavioral medicine sleep clinic, in a mid-sized urban center with a population of 700,000. Although not depicted in the figure, the first intervention for most patients with chronic insomnia is the provision of hypnotic medication, which is the standard response to an insomnia complaint when patients are in the office of a family physician. The next step up the hierarchy is a 6-week, computerized treatment (return2sleep.com) that patients access from their homes, one of the first of its kind in North America.¹² This program employs cognitive behavioral strategies for managing insomnia, includes homework exercises, determines an appropriate bedtime for the individual through use of a sleep calculator, and provides feedback to users to maximize self-management of the condition. Upon completion of return2sleep.com, or when the individual indicates that they no longer wish to continue using it, patients have the option of an on-site single session consultation with a staff psychologist or psychological associate (graduate student in clinical psychology; step 2). If after the consultation, more intensive

intervention is required, patients have the option of a 6-week cognitive behavioral group treatment run by a staff psychologist or a psychological associate (step 3). The components of the group intervention are identical to that of the computerized treatment; however, patients receive more individualized feedback, the opportunity to hear about how others are coping with similar problems, and more attention. Following completion of the group, if individuals are continuing to require care, they are provided with individual treatment with a staff psychologist who specializes in behavioral sleep medicine (step 4).

A review of the stepped care literature echoes the words of Edinger¹¹ and illustrates that little is known about providing more or less intensive service to those with chronic sleep problems. Past research has tended to focus on the decision to seek consultation with a healthcare provider, typically a family physician or a general practitioner. Some of this research shows that increased consultation with a general practitioner regarding sleep is associated with increased sleep onset latency, time awake at night, daytime fatigue/sleepiness, and reduced total sleep time.^{1,13,14} Other research has shown that consultations were positively associated with perceived severity of insomnia,^{1,15} presence of comorbid

medical conditions,¹⁶ increasing age and unemployment,¹ and a perception that insomnia is due to poor sleep habits.¹⁵

Hypotheses

Based on a review of the literature, the following hypotheses were made: (a) those who are older and unemployed will be more likely to step up the stepped care plan; (b) Those with less favorable sleep onset latency, time awake at night, and sleep quality will be more likely to step up the stepped care plan; (c) those with comorbid psychiatric conditions or symptoms suggestive of alternative sleep disorders will be more likely to step up the stepped care plan.

METHOD

Design

These data represents a consecutive series of patients who participated in a stepped care model within an outpatient behavioral medicine sleep clinic. As such, this is a non-controlled design.

Participants

Participants were 50 adults referred by physicians to a behavioral sleep clinic. Demographic and sleep features of the sample are listed in **Tables 1** and **2** and illustrate that the sample was typical of help-seeking adults with chronic insomnia with regard to disturbed sleep. Inclusion criteria for the study were access to high speed internet and a home computer, a disturbance of sleep consisting of delay in sleep onset, return to sleep, or early-morning awakening > 30 min, the report of at least one symptom of daytime impairment (e.g., fatigue, lack of concentration), and a duration ≥ 6 months, occurring ≥ 4 nights per week. There was no maximum allowable total sleep time ([TST] e.g., 6.5 h) for inclusion in the study. The inclusion criteria were consistent with the general research diagnostic criteria for insomnia disorder.¹⁷ If a comorbid sleep or psychiatric disorder was present, treatment of this condition was stable at the time of entry into the study based on patient self-report. We did not require that medications be stable; many of the participants had not responded successfully to sleep medication. Exclusion criteria for the study were the presence of shift work, head injury, acute suicidality, current mania, schizophrenia, current or past cognitive behavioral treat-

Figure 1—Stepped care model

Table 1—Descriptive features of sample

	M	SD
Sleep Diary		
Sleep onset latency (SOL)	47.86 min	47.4 min
Number of nocturnal awakenings (NOW)	2.36	1.5
Wake time after sleep-onset (WASO)	77.34 min	58.2 min
Total sleep time (TST)	340.62 min	115.2 min
Sleep efficiency (SE)(%)	68.97	19.9
Sleep quality (SQ)	1.65	0.78
Medication use (%)	47.52	45.2
Self-Report		
Insomnia Severity Index (ISI)	19.28	5.2
Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-10)	40.74	9.1
Multi-Dimensional Fatigue Inventory (MFI-20) (general fatigue subscale)	13.92	3.6

ment of insomnia, or elevated substance use. Elevated substance use was defined as consuming > 14 alcoholic beverages per week for males or and > 12 alcoholic beverages per week for females.

Measures

Sleep Diary

A standard sleep diary¹⁸ collected information pertaining to sleep quality (SQ), wake after sleep onset (WASO), sleep-onset latency (SOL), and medication use (both psychiatric and sleeping agents). Although sleep diaries also measure TST, number of awakenings (NOW), and sleep efficiency (SE), these variables were not explicitly studied for reasons of parsimony. Sleep diary measures were scored for each night and then averaged across the recording period. Although not perfectly correlated, sleep diary ratings have been shown to correlate significantly with results obtained using polysomnographic monitoring.^{19,20} Sleep diaries tend to provide overestimates of SOL and WASO, and underestimates of TST, relative to PSG²¹⁻²⁴; however, they are one of the most widely used measures of insomnia.

Insomnia Severity

The Insomnia Severity Index (ISI)¹⁸ measured the degree of dissatisfaction and daytime impairment associated with insomnia. The ISI has been found to have acceptable reliability and construct validity.^{25,26} Scores can range from 0 to 28, with higher scores indicating more impairment. Scores > 14 are thought to indicate the presence of clinical insomnia.²⁵

Fatigue

The general fatigue subscale of the Multi-Dimensional Fatigue Inventory (MFI)²⁷ measured general levels of fatigue. The general fatigue subscale has been found to have good internal consistency (ranging from 0.83-0.90), and scores have been shown to positively and significantly correlate with other self-report measures of fatigue.²⁷ Scores on the subscale can range from 4 to 20, with higher scores indicating greater fatigue.

Beliefs and Attitudes

The Dysfunctional Beliefs and Attitudes about Sleep Scale-revised version (DBAS-10)²⁸ is a 10-item self-report measure of maladaptive beliefs about sleep (e.g., beliefs about the immediate and long-term negative consequences of insomnia, beliefs about the need for control over insomnia). Although developed as an analogue scale, it was transformed into a Likert-type scale, with responses ranging from 1 (strongly disagree) to 6 (strongly agree). Thus, total scores could range from 10 to 60, with higher scores indicating more maladaptive cognitions regarding sleep. The DBAS-10 has moderate reliability and validity.²⁹

Demographic Features

Age, employment status, and gender were collected in a telephone screening interview. Sleep disorder symptom comorbidity was assessed using the Insomnia Interview Schedule¹⁸ as well as using chart information regarding physician-diagnosed sleep disorder available at the time of screening. Participants were asked about whether they experienced any of the following: snoring, pauses in breathing at night (apnea symptoms); leg twitching or jerking during

Table 2—Sample characteristics

Variable	%	N
Referred by physician	100	50
Female gender	70	35
Post-secondary education	80	40
Employed	58	29
Married	56	28
Psychiatric comorbidity	60	30
Depressive disorder	44	22
Generalized anxiety disorder	28	14
Posttraumatic stress disorder	8	4
Panic disorder	16	8
Social phobia	10	5
Obsessive compulsive disorder	8	4
Sleep symptom self-report comorbidity		
Apnea	22	11
Restless legs syndrome	24	12
Periodic limb movement syndrome	30	15
Parasomnia	20	10

night, awakening with cramps in legs (periodic limb movement symptoms); crawling or aching feelings in the calves, inability to keep legs still (restless legs symptoms); and nightmares, night terrors, sleepwalking/talking, teeth grinding (parasomnia symptoms). If participants endorsed any of these problems, sleep disorder symptom self-report comorbidity was scored as 1 = present. Support for the validity of the method was previously documented.³⁰ With established reliability and validity, the Mini-International Neuropsychiatric Interview,³¹ a structured clinical interview for the Diagnostic and Statistical Manual for Mental Disorders axis I disorders, was administered by the study coordinator and used to assess psychiatric comorbidity. We also administered the Clinical Global Improvement Scale (CGI) at the end of step 1 to measure perceptions of change in sleep. The Clinical Global Improvement Scale-self-report version (CGI)³² assessed patients' perceived global improvement. The CGI asked patients to report the overall change in their sleep and in sleep-related effects as a result of participation in their treatment. Participants are asked to rate the change in their sleep and not in any other problem such as chronic pain, depression, or anxiety. Response choices ranged from very much improved (1) to very much worse (7). Evidence of the construct validity of the CGI-self-report version comes from the demonstration that CGI scores are significantly and positively associated with treatment-related changes in sleep parameters (e.g., TST, SE).³³ Lastly, the Client Satisfaction Questionnaire (CSQ)³⁴ was administered at the end of Step 1 and measured global satisfaction with service.

Procedure

Upon physician referral to a teaching hospital behavioral medicine sleep clinic, potential participants received written information describing the services in the clinic and a followup telephone call from a clinic coordinator. Potential participants

were told that the sleep clinic has a number of services including computerized treatment, on-site single-session consultation, on-site group treatment, and on-site individual treatment. All participants were told that receiving initial computerized treatment for insomnia did not remove the individual from the in-person waitlist or prioritize placement on that waiting list in any way. Participants were next asked whether they would be interested in receiving initial computerized treatment for insomnia. If interested, individuals were phone-screened to determine whether they met inclusion and exclusion criteria for the study and whether they were interested in participating. Informed consent was obtained at this time. Next, information was collected by telephone regarding symptoms of sleep disorders, as well as medical history and current medications (for sleep and any other problem). Additionally, the Mini-International Neuropsychiatric Interview (MINI)³¹ was administered by the study coordinator. All participants completed a computerized baseline questionnaire package consisting of 7 days worth of sleep diaries, the MFI, ISI, and DBAS-10.

Once complete, participants entered Step 1. A description of the steps follows:

Step 1 Intervention

A 6-week computerized treatment, return2sleep.com, served as the initial step. Components were psychoeducation (week 1), relaxation training (week 2), stimulus control and sleep restriction (week 3), cognitive therapy (week 4), sleep hygiene education (week 5), and mindfulness meditation (week 6). Participants logged onto the website from their homes, completed homework, and received automated feedback about their progress.

Step 2 Intervention

The step 2 intervention consisted of an on-site single-session consultation with a staff psychologist or psychological associate in the clinic. During this appointment, progress was reviewed and ideas regarding further cognitive behavioral intervention were generated.

Step 3 Intervention

The step 3 intervention consisted of a manualized 6-week on-site cognitive behavioral group treatment program. Groups met weekly for 90-min sessions, and were led by a clinical psychologist or psychological associate. There were 5 to 6 members per group. Treatment components were identical in content and sequence to the computerized program.

Step 4 Intervention

The step 4 intervention consisted of individual psychotherapy conducted by a clinical psychologist, resident, or psychological associate in the clinic. Intervention was uniquely tailored to the patient.

After the beginning of step 1, a brief e-mail was sent at week 3 inquiring into whether they were having any difficulties with the site, and then again at week 6 and week 10 to prompt them to re-do the questionnaire measures and the sleep diaries. At week 6, participants completed the CGI and CSQ. After week 10, there was no further contact with participants until their name came to the top of the clinic in-person waiting list. At this time, participants were contacted by telephone by a receptionist

or staff psychologist to inquire about the need for and interest in having a one-session on-site consultation (step 2). Interested individuals had appointments scheduled and disinclined individuals were asked about reasons for declining. At the end of the on-site consultation meeting, interest in and need for further treatment of insomnia were reviewed with the participant, and a description of the group treatment program (step 3) was provided. Interested individuals began group treatment. At the end of the group treatment program, interest in and need for further individual treatment of insomnia (step 4) was discussed. Interested individuals were assigned a therapist. Sleep diaries were administered at the beginning of steps 1, 2, and 3, but not step 4. The ISI, DBAS-10, and MFI were administered at the beginning of steps 1 and 2 but not the remaining steps. The lack of standardization of test administration reflected that the primary intent of the study was to assess service uptake rather than outcomes at the various steps. The study was approved by the ethics review board at the University of Manitoba.

RESULTS

Results were analyzed using multinomial logistic regression. The criterion variable was final step (1 = return2sleep.com, 2 = single session consultation, 3 = group treatment, 4 = individual treatment). Prior to analysis, all assumptions of the approach were evaluated. Preliminary inspection of missing data revealed that there were complete questionnaire and sleep diary data at step 1, that 20% of questionnaire data and 36.8% of sleep diary data were missing at step 2, and that 36.4% of sleep diary data were missing at step 3. As a result, missing values analysis was conducted using SPSS v. 18, and missing values were imputed.

Of the initial set of participants, results in **Figure 1** illustrate that 35% (19/50) moved up to step 2, 22% (11/50) moved up to step 3, and 6% (3/50) moved up to step 4. For comparison purposes, existing volume data from this clinic showed that, in the 8 years prior to the introduction of the stepped care model, 71% of referred patients received group treatment (what we are referring to as step 3).

To conduct the logistic regression analysis, we removed 3 individuals (those in receipt of step 4) due to insufficient numbers in cells. This resulted in a final sample size of $n = 47$ for the regression analyses. Results from examination of hypothesis one are presented in **Table 3**, and illustrate that age and employment status but not gender affected movement up the care pathway. For each one unit change in age (from younger to older), the odds of receiving the step 3 intervention increased by 85.7%. For each one unit change in employment status (from employed to unemployed), the odds of receiving the step 3 intervention increased by 95%. There was no significant impact of demographic variables predicting receipt of the step 2 intervention.

Results from examination of hypothesis two are presented in **Table 4** and show that SQ at step 1 (return2sleep.com) significantly predicted movement up the stepped care pathway. For each one unit improvement in SQ, the odds of receiving the step 3 intervention decreased by 91%. Alternatively put, less favorable SQ was associated with more intensive service receipt. There was no significant impact of SOL or WASO at step 1 on movement up the stepped care pathway. There was no significant impact of SQ, SOL, or WASO at step 1, or change in these

Table 3—Impact of demographic variables on group treatment for insomnia (n = 47)

Variable	B	SE	Wald	df	p	Exp (B) (95% CI)
Intercept	1.07	1.0	1.13	1	0.29	
Age	-1.95	0.97	4.0	1	0.04	0.14 (0.02, 0.95)
Gender	0.39	0.95	0.16	1	0.69	1.47 (0.24, 4.5)
Employment	-2.98	1.3	5.5	1	0.02	0.05 (0.004, 0.62)

Table 4—Impact of sleep at step 1 on movement up to group therapy (n = 47)

Variable	B	SE	Wald	df	p	Exp (B) (95% CI)
Intercept	1.52	1.16	1.71	1	0.19	
Sleep onset latency	-0.94	1.03	4.76	1	0.36	0.39 (0.05, 2.9)
Wake time after sleep onset	-0.73	0.99	0.55	1	0.46	0.48 (0.07, 0.33)
Sleep quality	-2.40	1.1	4.76	1	0.03	0.09 (0.01, 0.78)

Table 5—Impact of sleep at step 2 on movement up to group therapy (n = 47)

Variable	B	SE	Wald	df	p	Exp (B) (95% CI)
Intercept	-2.17	1.37	2.52	1	0.11	
Sleep onset latency	3.13	1.30	5.81	1	0.02	22.83 (1.79, 290.5)
Wake time after sleep onset	-1.35	0.94	2.0	1	0.15	0.26 (0.04, 1.64)
Sleep quality	0.15	0.99	0.02	1	0.88	1.16 (0.17, 8.11)

Table 6—Sleep at different steps

	Step 1		Step 2				Step 3			
	Completers		Completers		Imputed		Completers		Imputed	
	M	SD	M	SD	M	SD	M	SD	M	SD
SOL (min)	48.0	47.0	40.38	32.1	41.35	44.3	44.2	26.6	38.1	24.6
NOW	2.36	1.5	2.62	2.2	2.1	1.9	1.25	0.5	1.3	0.4
TST (min)	340.8	114.0	357.24	102.7	381.6	112.2	339.0	44.8	333.0	38.3
WASO (min)	77.4	58.2	60.0	54.4	69.52	57.2	35.0	25.0	30.0	22.7
SE (%)	69.0	20.0	76.78	19.5	81.0	18.2	80.3	5.5	78.8	5.5
SQ	1.65	0.77	1.58	0.70	1.54	0.69	2.52	0.54	2.33	0.4

variables predicting the odds of receiving the step 2 intervention. Thus, response to treatment did not affect receipt of more intensive services.

Results in **Table 5** illustrate that SOL at step 2 significantly predicted movement up the stepped care pathway. For each one unit change in SOL, the odds of receiving the step 3 intervention increased by 22-fold. Less favorable SOL predicted receipt of the step 3 intervention. Neither SQ nor WASO at step 2 predicted movement up the steps, nor did change in these variables from step 1 to step 2. Thus, response to treatment did not affect receipt of more intensive services.

Results showed that scores on the MFI-20, DBAS-10, and ISI at step 1 (or step 2) did not significantly predict movement up the steps. Results from examination of hypothesis three showed that neither psychiatric nor sleep symptom comorbidity significantly increased the odds of moving up the stepped care pathway. Among those with psychiatric comorbidity, those who did not proceed to step 2 reported no change in the

frequency of nights of medication use ($M = 0$); those who proceeded to step 2 had fewer nights of medication usage ($M = 33.33\%$ $SD = 57.7$); and those proceeding to step 3 had no change in frequency of medication use ($M = 0$). Thus, for those with psychiatric comorbidity, it seems unlikely that increased medication use was responsible for the lack of receipt of more intensive services. A similar pattern of findings was observed for sleep symptom comorbidity.

Of this series of patients, 3 requested access to the step 1 treatment (return2sleep.com) after the conclusion of the step 3 intervention (group therapy). When examined, we noted that none of these individuals re-accessed the online program despite receiving a new username and password. Results in **Table 6** illustrate the average sleep diary scores for data that was available at steps 1 ($n = 50/50$), 2 ($n = 12/19$), and 3 ($n = 7/11$). Both data from completers and multiply imputed data are presented. As a group, those in receipt of the step 3 intervention have experienced improvements in sleep compared

to baseline (prior to step 1). Next, we examined perceived improvement and satisfaction with step 1. Of those who *did not* proceed from step 1 to step 2, 81.8% reported improvement in sleep on the Clinical Global Improvement Scale (CGI). On the Client Satisfaction Questionnaire (CSQ), and of those who *did not* proceed from step 1 to step 2, 83.3% rated the quality of step 1 service as good to excellent, 75% indicated that they had received the service that they wanted (in step 1), 66.7% reported that most of their needs had been met in step 1, 83.3% reported that if a friend were in need of similar type of help, that they would recommend step 1, and 75% reported that services received in step 1 helped them to more effectively manage their problem. Of those who *did not* proceed from step 1 to step 2, 45.5% had sleep efficiency > 85%, and 45.0% had scores on the Insomnia Severity Index which fell below a clinical cutoff suggestive of insomnia (i.e., 13.0). These results indicate that approximately half the sample that completed step 1 had sleep in the normative range, but that a larger number were satisfied with the changes and felt themselves to be improved.

DISCUSSION

This was a case series study of 50 adults presenting for psychological treatment of chronic insomnia and proceeding through a stepped care model. As such, it represents one of the first illustrations of the use of stepped care for insomnia in a public health setting. An important finding of the study was that fewer participants accessed the more intensive steps (e.g., group and individual therapy) when provided with an initial low-intensity intervention (return2sleep.com). Although not a controlled investigation, prior to the advent of this stepped care model, 71% of referred patients were receiving more intensive services (group treatment) at this site, compared to the rate of 22% noted in this case series study. Stepped care approaches, where non-responders to a less intensive therapy receive a more intensive intervention, aim to only provide intensive assistance to those who need it, thereby allocating therapeutic resources more efficiently. From a stepped care perspective, this particular model increased service efficiency by 69%. One way of envisioning how stepped care might work to treat the thousands of people with insomnia is to provide steps 1-3 in primary care, and step 4 at a specialty sleep clinic.

A second main finding of the study was that belonging to particular demographic groups (being older, unemployed) and having poor sleep (quality and latency) predicted receipt of more intensive services for insomnia. This is consistent with results from other research examining consultation patterns for those with insomnia.^{1,13,14} These authors reported that increasing age, more severe insomnia, and greater unemployment predicted patient consultation for the problem of insomnia. Practical considerations such as increased time available for treatment may explain why the older and unemployed were more likely to receive on-site services. In the current study, the converse finding was that younger individuals were less likely to pursue more intensive services. Other researchers have shown that younger individuals may be more receptive to technology and may have better outcomes in self-administered

treatments.³⁵ Of course other explanations are also possible and are discussed below. Available sleep diary and perceived improvement data suggest that the number of participants who became normal sleepers in step 1 was modest but perhaps typical of CBT-I self-help interventions for insomnia. A review of the effectiveness of self-help CBT-I showed that normative sleep at the end of treatment programs is typically in the range of 18% to 50%.³⁶ In this study, an even larger number of patients detected an improvement in their sleep and were satisfied with the step 1 intervention. After receipt of step 1, approximately 50% were sleeping optimally, but the group as a whole may have had a renewed sense of hopefulness or perhaps a greater feeling of mastery associated with having some improvement in a challenging and chronic health problem. The finding that satisfaction ratings outstrip sleep status has also been found with in-person programs.

A third main finding of the study was that neither psychiatric nor sleep disorder symptom comorbidity predicted receipt of more intensive services. This is noteworthy, given that 60% of the sample met DSM-IV criteria for an axis I disorder, and approximately 22% had symptoms suggestive of alternative sleep disorders. These results suggest that individuals with comorbidity may not perceive greater need for more intensive services, may be satisfied with briefer interventions, may have received additional treatments (e.g., psychiatric medications) during the course of stepped care, may have been demoralized by a poor outcome with low-intensity treatments, and/or may feel that more intensive behavioral intervention for sleep will not address a significant part of their sleep problem. A recent investigation in our laboratory showed that return2sleep.com was largely robust to psychiatric and sleep symptom comorbidity, suggesting that these groups were not disadvantaged in terms of clinical improvements associated with a low-intensity treatment (our step 1).³⁰ Thus, both lack of significant improvement at step 1 with consequent low morale is probably an unlikely explanation for why individuals with comorbidities did not receive more intensive services in this stepped care model. Additionally, we did not find that those with comorbidities were more likely to be receiving extra medication treatments such as antidepressants or sleeping agents. Anecdotal information provided by participants in this study suggested that there was reduced need for service after completion of a low-intensity step 1 intervention. The current investigation also found that daytime fatigue, and less/more dysfunctional beliefs about sleep did not predict movement up the stepped care pathway. Fatigue in particular may not be a sufficient impediment to receiving more intensive services for insomnia.

A fourth ancillary finding of this study is that very few patients actually “stepped down” in this pathway. At the conclusion of group treatment, only 3 patients requested renewed access to return2sleep.com, and none of the patients who received individual therapy requested to rejoin a group treatment. Examination of web usage patterns reveals that these individuals did not actually revisit the site. Instead it seems that access to the website served as a reassuring aid, much like having a bottle of sleeping medicine that is rarely used near the bedside.

This study involving the use of stepped care for insomnia in routine clinical practice had a number of limitations. Some

of these include the use of a single publicly funded site and a single model to obtain this data, lack of complete outcome data for each of the steps in the model owing to the emphasis on service receipt rather than outcomes, and small sample size. Using this model at other sites might produce differing results owing to contextual factors. Upon referral, patients access health services such as this one at no charge after providing their healthcare number. Our staff are equally comfortable with providing low- and high-intensity treatments, and there was no perceived threat associated with providing self-administered treatments. This might not be the same in other contexts where low remuneration for behavioral sleep services is the norm. Additionally, the decision to step up in this stepped care model is mutually agreed upon between staff and patients, and there is/was a lack of standardized criteria to make this decision. It is possible that bias was introduced at these points. Future studies will determine whether patient and provider decision-making is inferior or superior to numerical decision aides regarding stepping up or down in stepped care pathways. Lastly, this was an uncontrolled study, so it is possible that other factors (e.g., spontaneous remission, regression to the mean, treatment seeking outside of the study) explained movement up the steps.

Future Research

There are a number of plausible factors that may drive movement up a care pathway, some of which pertain to individual level variables and others to contextual level variables.³⁷ Individual variables may include perceived need, convenience, belief in the importance of working with a professional to solve health problems, and degree of social support. Contextual factors may include advice from others to seek care for insomnia and policies which facilitate or impede access to care for insomnia. Although this investigation focused on individual-level variables, more examination of contextual factors would be an important future area of study. For example, a study that compared a publicly funded stepped care model with a privately funded one would provide an interesting examination of context in the use of stepped care. Future investigations should compare outcomes in stepped care models for insomnia and contrast this with treatment as usual. The efficiency produced by stepped care models is only as good as the outcomes that the models produce. In the absence of data showing that the outcomes are at least as good as treatment as usual, stepped care is not a viable future opportunity in this area. More qualitative study of why individuals choose to proceed to more intensive services may prove to be very fruitful in this area.

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