



ELSEVIER

Sleep Medicine 5 (2004) 359–367

SLEEP  
MEDICINE

www.elsevier.com/locate/sleep

Original article

## Two new tools for assessing patients' knowledge and beliefs about obstructive sleep apnea and continuous positive airway pressure therapy

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Received 26 September 2003; received in revised form 10 December 2003; accepted 23 December 2003

### Abstract

**Background and purpose:** Patients' knowledge and beliefs about their illnesses are known to influence a range of health related variables, including treatment compliance. It may, therefore, be important to quantify these variables to assess their impact on compliance, particularly in chronic illnesses such as Obstructive Sleep Apnea (OSA) that rely on self-administered treatments. The aim of this study was to develop two new tools, the Apnea Knowledge Test (AKT) and the Apnea Beliefs Scale (ABS), to assess illness knowledge and beliefs in OSA patients.

**Patients and methods:** The systematic test construction process followed to develop the AKT and the ABS included consultation with sleep experts and OSA patients. The psychometric properties of the AKT and ABS were then investigated in a clinical sample of 81 OSA patients and 33 healthy, non-sleep disordered adults.

**Results:** Results suggest both measures are easily understood by OSA patients, have adequate internal consistency, and are readily accepted by patients. A preliminary investigation of the validity of these tools, conducted by comparing patient data to that of the 33 healthy adults, revealed that apnea patients knew more about OSA, had more positive attitudes towards continuous positive airway pressure (CPAP) treatment, and attributed more importance to treating sleep disturbances than non-clinical groups.

**Conclusions:** Overall, the results of psychometric analyses of these tests suggest these measures will be useful clinical tools with numerous beneficial applications, particularly in CPAP compliance studies and apnea education program evaluations.

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*Keywords:* Obstructive sleep apnea; Continuous positive airway pressure; Patient knowledge; Patient beliefs; Apnea knowledge test; Apnea beliefs scale

Obstructive Sleep Apnea (OSA) is a sleep-related breathing disorder that involves episodes of upper airway obstruction [1]. In Australia, sleep disordered breathing is estimated to affect between 2.6 and 17.9% of the population [2], and as such constitutes a significant health problem. Currently, the first line of treatment for most cases of OSA is continuous positive airway pressure (CPAP) therapy [3–8]. Therefore, it is important to investigate how to maximise CPAP treatment outcomes for OSA patients.

The effectiveness of CPAP therapy relies upon regular use by the patient, which in turn depends upon the patient's willingness and ability to correctly use the CPAP machine during sleep [9,10]. Compliance (also known as treatment adherence) in this context can be defined as the extent to which patients use CPAP appropriately, and although

compliance rates vary, these are typically poor [3]. For example, estimates of compliance range from 1.1 to 5.7 h per night [3,9–15], suggesting that in many cases use of CPAP may be sub-optimal. Therefore, it is important to identify effective interventions that may help improve CPAP compliance.

Attempts to improve CPAP compliance have ranged from improving the technical aspects of CPAP (e.g. improving mask fit [16,17]), to manipulation of human factors (e.g. providing patients with detailed instructions about the correct use of CPAP [18]). Interestingly, the manipulation of human factors to increase treatment compliance is relatively new in the sleep apnea literature, although this approach to improving compliance has been investigated in other medical arenas for some time. Furthermore, the manipulation of variables such as patient knowledge and health beliefs has been shown to improve

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health outcomes in a range of conditions, including those that share characteristics with sleep apnea (e.g. chronicity and reliance on self-administered treatments), such as diabetes [19] and hypertension [20]. Generalising from the results of these studies suggests that manipulating knowledge and health-belief variables may also be important in CPAP compliance.

In fact, there have been only a small number of previous studies attempting to explore the relationship between CPAP education and compliance [21], very few apnea belief-compliance studies (for an exception see Ref. [22]), and possibly no studies of education, belief, and compliance (although a relationship has been posited between these three variables in some health behaviour models (see Ref. [23] for a review)). Among reported CPAP compliance and education studies, findings have been difficult to interpret given the absence of formal measures of change in CPAP and apnea knowledge, especially pre- and post-education [14,18,21]. That is, these studies have not specifically examined whether patient education programs result in knowledge gain, possibly because of the absence of an appropriate tool for this purpose (cf Ref. [24]). Similar limitations apply to studies of apnea belief-compliance or knowledge-belief-compliance.

Clearly, the investigation of the relationship between apnea knowledge-beliefs and treatment compliance requires that we have suitable tools for assessing patients' understanding of OSA and CPAP and their attitudes towards treatment. Ideally, such measures would be administered before and after interventions to change beliefs and understanding, and the effect on compliance of these interventions then determined. The primary aim of this study was, therefore, to develop two new tools for assessing apnea knowledge and beliefs, respectively, and to investigate the psychometric properties of these tests in a clinical group. A secondary aim was to provide preliminary data on the psychometric properties of these tests using a small sample of healthy, non-sleep disordered adults.

## 1. Method

### 1.1. Participants

#### 1.1.1. Clinical sample

Clinical group participants (CPs) were 81 consecutive adult patients, diagnosed via polysomnography with OSA, who agreed to undergo CPAP titration at the Sleep Investigations Unit (SIU) of The Prince Charles Hospital (TPCH), Queensland, Australia. CPs were mostly male ( $n = 61$ ) and middle-aged (mean age,  $52.63 \pm 12.60$  (SD)) with severe apnea (mean respiratory disturbance index; RDI,  $31.17 \pm 21.69$  (SD)). Ninety-one percent of CPs were overweight (body mass index; BMI range 25–30), including 66% who were obese (BMI > 30). Most CPs ( $n = 61$ ) had

completed year 10 level of education, and none had previously received CPAP therapy.

#### 1.1.2. Non-clinical sample

Non-clinical group participants (NCPs) were recruited from a local community group in response to an advertisement calling for healthy volunteers without a sleep disorder diagnosis ( $n = 35$ ). A formal check of the sleep-disorder status of NCPs revealed two participants potentially at risk of OSA based on Sleep Disorder Questionnaire scores [25]. Data from these two participants were excluded from further analysis. NCPs were mostly male (64%), middle-aged ( $M = 54.21$ ,  $SD = 7.96$ ), and educated to year 10 (88% of sample). Fifty-two percent of NCPs were overweight (BMI > 25), including 6% who were obese (BMI > 30).

## 1.2. Materials

### 1.2.1. Apnea knowledge test

#### 1.2.1.1. Pilot testing: expert- and patient-review of the AKT.

The initial version of the AKT was based on a similar measure developed by Murphy et al. [24], and our first draft incorporated all 11 items of that study. Nine additional items were generated on the basis of patient education materials distributed at the TPCH SIU. An expert panel consisting of sleep physicians, senior medical staff, a clinical nurse consultant, and specialists in sleep psychology was asked to review the initial set of 20 AKT items.

The expert review process resulted in the exclusion of five items and modification of two items. Reasons for excluding AKT items included perceived redundancy.<sup>1</sup> The two items identified as needing modification were reworded in line with recommendations of AKT reviewers and subsequently retained. The final version of the AKT included six items from the original Murphy et al. scale [24].

The AKT was then subjected to patient review; it was administered to the first 10 study participants with instructions to comment on any difficulties experienced with the items. No difficulties were reported, and therefore no further changes were made.

The final version of the AKT comprised 15 items designed to assess knowledge about OSA and CPAP. Items included 13 multiple-choice and two open-ended questions (Appendix A). Incorrect responses on multiple-choice items (items 1–13) were scored zero, and correct responses were awarded one point each. For item 14, one point was awarded for each correct element (up to a maximum of four points). For item 15, one point was awarded for each correct element

<sup>1</sup> AKT items were excluded for the following reasons: level of technical language assessed as too high (one item), content assessed as irrelevant (two items), redundancy of information (one item), and information not covered within current OSA education materials (one item).

(up to a maximum of three points). Total AKT scores were summed across items, with a maximum of 20. Higher AKT scores indicate greater OSA and CPAP knowledge.

### 1.2.2. Apnea beliefs scale

Items for the Apnea Beliefs Scale (ABS) were based on a literature review and consultation with SIU staff. Content thought to be fundamental to compliance was targeted in constructing this questionnaire and included items designed to assess: perceived impact of OSA (four items); trust in medical staff (two items); outcome expectations (four items); CPAP acceptance (two items); openness to new experiences (two items); commitment to change (four items); willingness to ask for help (two items); attitude to health (two items); and self-confidence (two items). Again, an expert panel reviewed ABS items, and 10 patients were asked to comment on the ABS. No changes were made on the basis of these reviews.

The final version included 24 statements to assess patients' attitudes and beliefs about sleep apnea and CPAP. Items were written on a 5-point Likert scale, ranging from agree-to-disagree. To reduce response bias, half of the items were negatively worded. After item reversal, where appropriate, scores on the ABS were calculated by summing responses. Scores range from 24 to 120, with higher scores indicating more positive attitudes towards compliance with treatment. ABS items are shown in Appendix B.

### 1.3. Procedure

Clinical and non-clinical participants completed the ABS and the AKT as part of a larger battery of self-completion questionnaires. To minimise order effects, the order of administration of questionnaires was counterbalanced using a Latin squares design. CPs were asked to complete questionnaires during routine SIU appointments. NCPs received a take-home questionnaire pack to complete at their convenience. Over 90% of questionnaires were returned to the researcher via reply paid envelopes within two weeks of distribution. Analyses reported below relate to the AKT and ABS only.

## 2. Results

Results are presented in two main sections addressing the psychometric properties of the AKT, followed by information on the psychometric properties of the ABS. A significance level of 0.05 was used for all statistical analyses.

### 2.1. AKT Test properties

#### 2.1.1. AKT readability

To maximise the likelihood that AKT items would be easily comprehended by apnea patients, items were written

in plain language, expert reviewers were asked specifically to comment on clarity, and a readability analysis was conducted to assess comprehensibility.

The Flesch reading ease formula, used in this study, is a measure of reading ease based on the average length of the sentences and the number of syllables in the written piece; scores range from 0 (very difficult) to 100 (very easy) [26]. The readability of the AKT was found to be 78.8, suggesting that the test is 'fairly easy reading' and should be comprehensible to patients at the grade four reading level.

#### 2.1.2. AKT descriptive statistics and internal consistency

In the clinical sample, the mean total AKT score was 11.17 (SD = 2.98). The percentage of correct responses item-by-item for multiple-choice questions is shown in Table 1. On open-ended questions (items 14 and 15), the modal correct response was 2/4 (range 0–4) and 2/3 (range 0–3), respectively.

Cronbach's alpha was calculated to evaluate the internal consistency of the AKT. Internal consistency, defined according to standards of reliability (see Ref. [27], was low to modest, a level considered appropriate for measures in the early stages of construct validation research ( $\alpha = 0.60$ ).

#### 2.1.3. AKT distractor analysis

The first step of the distractor analysis was inspection of missing data, revealed on all multiple-choice items except items 3 and 6. The percentage of missing data ranged from 0 to 19.7%, with an average of 6.98% per item. Missing data on open-ended questions was minimal; a majority of CPs

Table 1  
Analysis of response patterns for apnea knowledge test multiple-choice items in a clinical sample of OSA patients ( $n = 76$ )

No.	AKT Item	% Of responses for each response option			
		1	2	3	4
1.	Definition of central sleep apnea	23 <sup>a</sup>	70	3	4
2.	What CPAP stands for	8	5	85 <sup>a</sup>	1
3.	Diagnosis of OSA	0	99 <sup>a</sup>	1	0
4.	Air leakage sites	43	2	23	33 <sup>a</sup>
5.	Definition of OSA	3	93 <sup>a</sup>	3	1
6.	Mechanism underlying CPAP	93 <sup>a</sup>	5	1	0
7.	Understanding of hospital CPAP trial	0	1	96 <sup>a</sup>	3
8.	Rules OSA patients should remember	6	1	4	89 <sup>a</sup>
9.	Problems associated with CPAP	16	4	50	30 <sup>a</sup>
10.	What to use to wash CPAP equipment	0	78	18 <sup>a</sup>	5
11.	When to wash CPAP mask	54 <sup>a</sup>	2	23	23
12.	When to use CPAP	49 <sup>a</sup>	0	51	0
13.	When not to use CPAP	0	49 <sup>a</sup>	0	52

Three CPs did not complete the AKT and ABS (these tests were not administered due to experimenter error), and two participants chose not to complete these measures. Data from these participants ( $n = 5$ ) was excluded from further analysis. The percent of responses may not sum to 100 due to rounding errors.

<sup>a</sup> The correct response.

(approximately 88% of the sample) completed the two open-ended AKT items.

To assess the extent to which distractors were endorsed for multiple-choice items, the percentage of responses for each response option was tabulated. Table 1 shows the percentage of responses for options 1–4 for each of the 13 multiple-choice items, with the correct response identified with superscript. In six out of 13 items each response option was endorsed by a proportion of the sample, suggesting that distractor items were particularly effective for these items. Of the remaining items, only one item had poorly endorsed distractors (item 3; answered correctly by 99% of our clinical sample). This may suggest the need to increase the difficulty of item 3 distractors in future research.

#### 2.1.4. AKT scores and patient education

Correlation analyses were performed between CPs' level of schooling and AKT scores to determine the extent of relationship between education and knowledge of OSA and CPAP. A significantly positive correlation between education and AKT scores suggests that, on average, more educated patients scored higher than those less educated ( $r = 0.30$ ,  $P < 0.05$ ). In broad terms, this finding provides some support for the validity of the AKT, assuming there is a relationship between general knowledge and apnea-specific knowledge.

#### 2.1.5. AKT scores in clinical versus non-clinical sample

Mean AKT scores among healthy sleepers were not significantly different from CP scores ( $t(106) = 0.880$ ,  $P = 0.381$ ). Specifically, healthy sleepers answered approximately 10 AKT questions correctly on average ( $M = 10.27$ ;  $SD = 3.41$ ). A preliminary estimate of the internal consistency of the AKT in the NCP sample was low to modest ([27], Cronbach's  $\alpha = 0.56$ ).

### 2.2. ABS test properties<sup>2</sup>

#### 2.2.1. ABS readability

The readability of the ABS was assessed, following the process described previously for the AKT. The results of the ABS readability analysis suggest this measure is 'easy to read' (Flesch reading ease, 72.3), and should be comprehensible to patients with sixth grade reading skills.

#### 2.2.2. ABS descriptive statistics and internal consistency

Table 2 displays the mean and variance statistics for ABS items. As can be seen from Table 2, the mean total ABS score was 88.20 ( $SD = 11.93$ ). To determine if items were susceptible to floor or ceiling effects, the average response for each item was calculated (Table 2). Overall, data from individual ABS items suggests relatively good scale use with standard deviations less than one for most items.

<sup>2</sup> A distractor analysis was not performed on the ABS, given the format of this test.

Table 2

Mean ratings (and standard deviations) on apnea beliefs scale items and total score in a clinical sample of OSA patients

No.	ABS item and brief item explanation	Mean	SD	Mode
1.	OSA no adverse effect on functioning	3.45	1.60	5
2.	Willingness to proceed in adversity	3.41	1.33	4 <sup>a</sup>
3.	CPAP is 'the answer'	3.38	0.83	3
4.	OSA limits friendships	2.87	1.17	3
5.	Intention to use CPAP all/every night	4.19	0.77	5
6.	Mask believed to be nuisance	3.24	0.92	3
7.	Willingness to ask for help	4.31	0.78	4
8.	CPAP is best treatment	3.59	0.78	3
9.	Complying 'to the letter'	4.57	0.60	5
10.	CPAP use is confusing	3.62	0.78	3
11.	Mask slows sleep onset	3.23	0.71	3
12.	Adherence to plans	4.01	0.82	4
13.	Mask will improve sleep quality	3.81	0.79	3
14.	Stressful response to new technology	3.68	1.18	4
15.	Health is secondary	3.44	1.54	5
16.	Enjoys new things	3.36	1.14	4
17.	Denies sleep problem	4.40	1.08	5
18.	Embarrassing to ask for help	3.61	1.29	4
19.	OSA my major health problem	3.37	1.17	4
20.	CPAP unlikely to affect sleep	3.49	0.93	3
21.	Desire to improve health	4.61	0.75	5
22.	Confident about ability to use machine	4.39	0.64	5
23.	Resolve to 'try anything' to fix OSA	4.47	0.72	5
24.	Knows what treatment is best for self	3.21	1.21	3
	ABS total	88.20	11.93	N/A

Higher ratings indicate items of greater agreement; a, multiple modes exist; the smallest value is shown; ABS minimum score, 24; maximum score, 120.

To assess the internal reliability of the ABS, Cronbach's alpha was calculated. The ABS was found to have at least modest reliability ( $\alpha = 0.75$ , see Ref. [27]).

#### 2.2.3. Missing data on the ABS

Inspection of the missing data on all items of the ABS revealed the percentage of missing data for each item to be less than 10%. Specifically, between four and eight values were missing per ABS item (1.3–5.3% of cases, total of 13 incomplete cases). No pattern of missing data was evident.

#### 2.2.4. ABS scores in clinical versus non-clinical sample

To explore ABS validity, CP and NCP scores were compared, on the expectation that non-apneic adults would score less than those with apnea. Our rationale was that people referred for sleep investigation would have different beliefs and attitudes towards apnea and CPAP than those who had not sought treatment for breathing-related sleeping disorders, and that healthy sleepers would view themselves as less willing, likely, or able to successfully comply with CPAP therapy. The results of an independent samples *t*-test showed significant differences between ABS scores depending on sample type,  $t(41.79) = 6.43$ ,  $P < 0.01$ .<sup>3</sup> As expected, NCP scores were lower on the ABS ( $M = 65$ ,

<sup>3</sup> Equal variances not assumed.

SD = 18.90) than those of apnea patients, indicating less positive belief about CPAP and compliance. Finally, a preliminary estimate of the internal consistency of the AKT in the NCP sample was low to modest ([27], Cronbach's  $\alpha = 0.62$ ).

### 3. Discussion

The primary aim of this study was to develop two new tools for assessing patient knowledge and beliefs about sleep apnea, respectively, and to investigate the psychometric properties of these tests in a clinical sample. The tests were designed for maximum readability, readily comprehended by patients, and maximum user acceptability among clinicians and patients, by using input from these groups. A secondary aim of this study was to document preliminary findings from a non-clinical sample on the psychometric properties of these tests.

#### 3.1. The apnea knowledge test

Estimates of AKT readability suggest that it is likely to be readily comprehended by most OSA patients. On average, patients in this clinical sample had 10 years of education, although only a fourth grade reading level (approximately) was needed to understand the test. Years of education do not necessarily equate with grade reading level [24], but it nonetheless seems reasonable to conclude that the simple language used in the AKT may ultimately contribute to its validity by maximising the comprehensibility of items.

Apneic patients scored an average of 11 out of a possible 20 correct items, suggesting that the difficulty of the test is probably adequate, given the absence of ceiling or floor effects. Interestingly, apneic patients' scores on the AKT were not significantly different from those of healthy controls, suggesting that apnea patients did not know more about their condition and its treatment than NCPs. This finding may indicate that patients at sleep disorders clinics, who have presumably discussed their sleep problems prior to referral, have as much need for apnea education as members of the general public.

An item-by-item analysis of the AKT suggests that it is generally well-received by patients, as indicated by the relatively small amount of missing data (including open-ended items) and the results of distracter analysis, which showed most distracters were appropriate.

Prior to the development of the AKT, the single published measure of apnea knowledge, by Murphy et al. [24], had a readability level of Flesch grade level, 5.4; Flesch–Kincaid reading ease, 71.7. The comparative ease of readability of the AKT is an important improvement; the excessive daytime sleepiness and decline in concentration reported by OSA patients necessitate easily read and understood measures [24]. The AKT has broader content coverage than Murphy et al.'s scale, particularly with regard

to the inclusion of items related to CPAP maintenance. These items may be significant when considering the relationship between knowledge and compliance, given that patients may be less likely to comply with treatments they do not understand how to use or maintain. In addition, the development of the AKT followed accepted psychometric scale development procedures [27], and these have been clearly articulated.

There are several important potential applications for the AKT, apart from inclusion in compliance research, as previously suggested. For example, it has recently been used for group evaluations of apnea patient-education programs [28], and findings from such applications suggest that it is a valid measure, sensitive to changes induced by formal patient training. Scores on the AKT have been shown to increase significantly in a repeated measures design, when education is provided before retesting [28]. The AKT could also be used to assess individual education needs, allowing information packages to be tailored to particular patients.

#### 3.2. The apnea beliefs scale

The readability of the ABS (grade six reading level) suggests that it is also likely to be readily comprehended by most apnea patients. As with the AKT, ease of readability may ultimately contribute to its validity because answers are unlikely to reflect comprehension problems.

On average, apneic patients in this sample scored 89 out of a possible 120 correct responses. An analysis of responses to individual ABS items suggests that, in general, the Likert scale was used effectively by participants. There was very little missing data on the scale overall. Apneic patients' ABS scores were significantly higher than those of NCPs. The results of this comparison may be interpreted as providing a preliminary indication of the validity of the ABS, since patients would be expected to report more positive beliefs about CPAP and greater motivation to comply with treatment. The study evaluating an apnea patient-education program [28], and indicating ABS sensitivity to changes in beliefs and attitudes, is further evidence of validity.

Prior to the development of the ABS, there was no published measure of patients' attitudes and beliefs towards sleep apnea. Given the fact that this variable has been shown to impact on compliance in other chronic conditions [29,30], it may seem somewhat surprising that it has been largely unmeasurable until now, with the exception of a small number of studies that have used generic health beliefs [22]. The advent of the ABS provides opportunities for applications in both research and individual client management. For example, incorporating this measure into compliance studies might indicate the extent to which patient cognition determines treatment outcome. It may also be possible to combine findings from the ABS and AKT to explore the impact of patient knowledge and beliefs on CPAP compliance; previous research on other illnesses has shown that knowledge may shape beliefs about general

health and illness severity [31,32]. For individual patients, the ABS may enable clinicians to directly address erroneous attitudes and beliefs about OSA and CPAP that could be potential barriers to compliance. Indeed, the ABS may be particularly suitable for use in cognitive behaviour therapy programs, which recognise the potential impact of patient cognition and behaviour on sleep disorders.

### Acknowledgements

The assistance and support of staff and patients at the Sleep Investigations Unit of The Prince Charles

Hospital Brisbane, Queensland, Australia is gratefully acknowledged.

Financial assistance for this project was provided by the School of Psychology and Counselling at Queensland University of Technology and is gratefully acknowledged.

Ethical clearance for this project was granted by The Prince Charles Hospital Human Research Ethics Committee and the Queensland University of Technology Human Research Ethics Committee.

### Appendix A. Apnea knowledge test

1. The type of sleep apnea that causes a patient to forget to breathe is:

- |                       |                           |
|-----------------------|---------------------------|
| ① central sleep apnea | ② obstructive sleep apnea |
| ③ mixed sleep apnea   | ④ none of the above       |

2. CPAP stands for:

- |  |                                 |
|--|---------------------------------|
| ① continues to push air past your nose | ② closed passages and pressures |
| ③ continuous positive airway pressure  | ④ central pauses and pressures  |

3. To diagnose sleep apnea, lab testing is usually held:

- |                    |                     |
|--------------------|---------------------|
| ① in the morning   | ② at night          |
| ③ in the afternoon | ④ none of the above |

4. Air leakages can occur:

- |                           |                    |
|---------------------------|--------------------|
| ① from the mouth area     | ② into the eyes    |
| ③ from the nostril region | ④ all of the above |

5. The type of sleep apnea that is caused when air passages in or near the throat become blocked, is called:

- |                       |                           |
|-----------------------|---------------------------|
| ① central sleep apnea | ② obstructive sleep apnea |
| ③ mixed sleep apnea   | ④ none of the above       |

6. CPAP works by:

- |   |  |
|---|--|
| ① keeping your airways open                 | ② administering medication to help you sleep |
| ③ encouraging sleep at a subconscious level | ④ none of the above                          |

7. During the CPAP trial in hospital

- ① you will have to get up every hour to adjust the CPAP system      ② you will be allowed to sleep as if at home, unattached to machines/ computers
- ③ you will be asked to wear a CPAP mask      ④ none of the above
- 

8. What is (are) the general rule(s) sleep apnea patients should remember?

- ① reduce weight      ② reduce alcohol intake
- ③ exercise more      ④ all of the above
- 

9. Possible problems with using the CPAP system include:

- ① blocked nose      ② pressure sores
- ③ dry mouth      ④ all of the above
- 

10. CPAP equipment should be washed using

- ① bleach      ② antiseptic solution
- ③ dishwashing detergent      ④ all of the above
- 

11. The mask and frame should be washed

- ① every morning      ② every month
- ③ every week      ④ when necessary
- 

12. CPAP works best when used

- ① whenever you sleep      ② every second night
- ③ every night      ④ weekdays only
- 

13. CPAP should NOT be used

- ① in winter      ② when you have a head cold
- ③ in summer      ④ none of the above
- 

16. What is sleep apnea? \_\_\_\_\_

17. Name three symptoms of sleep apnea? \_\_\_\_\_

**Appendix B. The apnea beliefs scale**

Answer each of these questions by shading the number that best represents your answer.

①	②	③	④	⑤
Strongly disagree	Disagree	Not sure / neutral	Agree	Strongly agree
Sleep apnea has no effect on my life				① ② ③ ④ ⑤
If things become too much I generally don't go through with them				① ② ③ ④ ⑤
CPAP is "the answer" to my sleep apnea				① ② ③ ④ ⑤
Sleep apnea gets in the way of my friendships				① ② ③ ④ ⑤
I intend to use the CPAP machine all night every night.				① ② ③ ④ ⑤
I believe using the CPAP mask will be a nuisance				① ② ③ ④ ⑤
I am willing to ask for help when it is required				① ② ③ ④ ⑤
CPAP is the best treatment for my health problems				① ② ③ ④ ⑤
I am willing to follow the directions of medical staff "to the letter"				① ② ③ ④ ⑤
I believe that using CPAP is very confusing				① ② ③ ④ ⑤
Wearing the CPAP mask will make falling asleep hard				① ② ③ ④ ⑤
Once I make a decision, I stick with that decision				① ② ③ ④ ⑤
Wearing the CPAP mask will improve the quality of my sleep				① ② ③ ④ ⑤
I find it stressful to use new machinery or technology				① ② ③ ④ ⑤
Good health is secondary to being able to do what I want in life				① ② ③ ④ ⑤
I enjoy trying new things, like snorkelling				① ② ③ ④ ⑤
I don't believe I have a sleep problem				① ② ③ ④ ⑤
I find it embarrassing to ask for help				① ② ③ ④ ⑤
Sleep apnea is my major health problem				① ② ③ ④ ⑤
I believe that CPAP will make little difference to my sleep				① ② ③ ④ ⑤
I want to improve my health				① ② ③ ④ ⑤
I am confident that I will be able to use the CPAP machine as taught				① ② ③ ④ ⑤
I would try anything that I thought might help my sleep apnea				① ② ③ ④ ⑤
I believe that I know what is the best treatment for me				① ② ③ ④ ⑤



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