

Supplementary Data

For the topic of telemonitor care versus usual care in CPAP compliance, searching terms included “OSA”, “obstructive sleep apnea”, “sleep apnea”, “OSAHS”, “obstructive sleep apnea and hypopnea syndrome”, “compliance”, “adherence”, “telemonitor”, “telemonitoring”.

In Pubmed, we used (“OSA” or “OSAHS” or “obstructive sleep apnea” or “obstructive sleep apnea and hypopnea syndrome” or “sleep apnea”) and (“compliance” or “adherence”) and (“telemonitor” and “telemonitoring”) as search strategy.

For the topic of supervised PAP titration versus home auto-adjusting pressure titration, searching terms included “OSA”, “obstructive sleep apnea”, “sleep apnea”, “OSAHS”, “obstructive sleep apnea and hypopnea syndrome”, “compliance”, “adherence”, “pressure”, “titration”.

In Pubmed, we used (“OSA” or “OSAHS” or “obstructive sleep apnea” or “obstructive sleep apnea and hypopnea syndrome”) and (“compliance” or “adherence”) and (“titration” or “pressure”) as search strategy.

However, in our study, our searching strategy used extensively searching strategy, because we found out that two topics were all talking about OSA and CPAP compliance, so they could be overlapped.

We only included randomized, prospective, controlled trials because we thought they were high quality studies and could produce high quality outcomes.

AMSTAR 2 was used to evaluate the quality of this meta-analysis.

Supplementary Figure List

Supplementary Figure 1. The rate of CPAP compliance (>4h) comparing

telemonitor care with usual care in OSA patients

Supplementary Figure 2. The change of Epworth Sleepiness Scale (score) comparing telemonitor care with usual care in OSA patients

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Supplementary Figure 4. The rate of CPAP compliance (>4h) comparing supervised PAP titration with home auto-adjusting titration in OSA patients

Supplementary Figure 5. The change of Epworth Sleepiness Scale (score) comparing supervised PAP titration with home auto-adjusting pressure titration in OSA patients

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Supplementary Figure 7. Funnel plot of CPAP compliance (telemonitor care vs. usual care)

Supplementary Table 1. Definitions of interventions about telemonitor care versus usual care in studies

Study	Usual care	Telemonitor care
Anttalainen 2016	UC group visited the pulmonologist after 3 months leading in a 3-month habituation phase in the UC group.	The module was attached to CPAP device, and transmitted compliance data every day automatically to online database. Study nurses made the data check-ups daily during weekdays. Treatment was considered successful when CPAP use was >4h/d, mask leak<0.4L/s, and AHI<5/h. Telemonitoring with online system was started in the TM group and continued until the treatment goals were achieved.
Fields 2016	Their initial visits were conducted face-to-face by the sleep clinician travelling to their community-based outpatient centers. Participants returned 1 to 2w later for in-person HST instruction from experienced sleep therapists.	The unit consisted a high-definition camera and 17-inch video monitor. Patients were provided with an HST device for use that night. An instructional DVD and brochure were provided to show how to perform the study. Sleep providers phoned participants 1 week and 1 and 3 months after commencing therapy. Subjects who completed the study protocol were invited to participate in a telephone feedback session with a qualitative researcher.
Fox 2011	Patients were contacted after 2 days to ask about progress and adherence, and to troubleshoot any problems with the machine. After 4-6 weeks, patients returned to the clinic to see their doctor, and information was downloaded from their machines.	All patients were oriented to CPAP, fitted with a mask, and given an auto-titrating machine; a modem was attached to the PAP device. Patients were contacted by the research coordinator after 2 days to ask about progress and compliance, and to troubleshoot any problems with the machine.

Frasnelli 2015	If no telemetric device was available while the patient was started on CPAP, patients were included in the control group.	CPAP device information for these patients was automatically downloaded to the internet on daily basis. The web-based computer program was used for convenient access. It was predefined that patients would receive phone calls if usage was <4h for two consecutive nights or if the average leak was >0.41/s for two consecutive nights.
Hoet 2017	Patients used the device each night for the whole night, and were able to contact the sleep unit as often as needed, during weekdays, for resolving any current problem interfering with their CPAP use. A group educational session for CPAP-treated patients was scheduled 1 month after CPAP initiation, and a visit to the doctor was schedule 1.5 and 3 months after initiating CPAP.	A universal telemonitoring unit added on the CPAP device that allows practioners to obtain data of patients' usage. Sleep technical workers were instructed to connect to the Web portal and to analyze patient's data each Tuesday and Friday, and were required to call the patient and to set up a visit with the staff of the sleep laboratory if air leaks > 50 L/min, residual AHI> 10/h, or CPAP use< 3h on 3 consecutive days.
Hwang 2017	Patients attended a 1-hour class with HSAT setup educating sleep apnea, CPAP therapy was briefly described, and the HSAT setup procedure was taught. Patients with AHI \geq 5 were provided a CPAP trail, typically for one week. Then for a 3-month follow-up.	TM was based on automatic processing of device data by the cloud-based application. During 3-month therapy, if CPAP usage thresholds were met, a message was automatically sent to the patient providing encouragement to improve use or reinforcing adherence.
Isetta 2016	UC group had the same follow-up schedule as the telemedicine group, but attended the hospital, received standard face-to-face follow-up with visits at months 1, 3 and 6, and extra visits if needed.	A biweekly six-item questionnaire about patients' status, physical activity, sleep time, CPAP use and treatment side effects. Staff monitor the answers, and solve problems.
Munafo 2016	Patients were dispensed a CPAP device on Day 0, and then contacted via phone on Days 1,7,14,30, and 90. CPAP usage	Patients Were dispensed a CPAP device on Day0, and a pamphlet about U-sleep, which could be used to monitor

	and effective data were tracked via the wireless modem attached to CPAP machine. Modem data were accessed via online platform. Sleep Data with a standard-of-care procedures include frequent phone calls and return clinic visits as necessary.	adherence. U-sleep is designed to receive CPAP device data and message patients and providers via text and/or e-mail based on a customizable set of rules. The sleep staffs were trained to set up and use the soft. Sequent contacts were in response to an automated message or based on clinical judgment.
Stepnowsky Jr 2007	Usual care consisted of a 1-week telephone call after CPAP initiation and a 1-month in-office follow-up visit by CPAP clinic staff. Patients were encouraged to call the clinic any time they had problems or concerns. 1-month CPAP compliance and efficacy data were downloaded at point to help.	Included the ability to telemonitor compliance and efficacy data. Efficacy data included the amount of mask leakage and the AHI. And clinical team would check the CPAP compliance on Data Center website for each patient. When problems occur, colored pathway will turn red/yellow, patients and clinicians will collaboratively solve the problems.
Sparrow 2009	Received general health care	Telephone-linked communications was designed around the concepts of motivational interviewing. Telemonitoring-CPAP content includes assessment of the patients' perceptions about and experiences with OSA and CPAP therapy
Taylor 2006	Included a scheduled clinic visit 1 month after initiating nasal CPAP and any subsequent clinic visits felt necessary by the care provider.	Patients were greeted with three questions regarding reported hours of nasal CPAP use, hours of sleep, and quality of sleep. The patient's responses to these questions were monitored daily by the sleep medicine practitioner. Appropriate course of action for these responses will be taken according to the guideline.
Turino 2017	A short instruction session on how to use a CPAP device was also given to patients and partners in the sleep unit by a trained nurse with experience in the follow-up of patients. The specialist nurse at the sleep unit visited all patients after	Each CPAP device in this group was equipped with mobile 2G technology capable of sending daily information on CPAP adherence, et al. to the database. Officer will contact patients if they occur problems.

	1 month of treatment. Information was downloaded from the device.	
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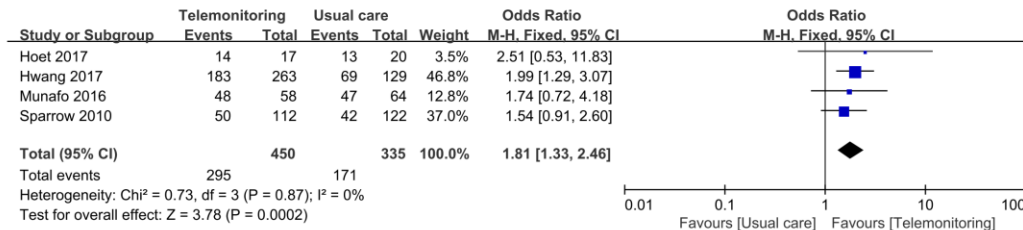
UC: usual care; CPAP: continuous positive airway pressure; AHI: apnea and hypopnea index; TM: telemonitoring; HST: home sleep testing;

Supplementary Table 2. Definitions of interventions in included studies about home-auto-titration pressure versus supervised PAP titration

Study	Home auto-titrating pressure	Supervised PAP titration
Antic 2009	Was used for four consecutive nights in patients' home. Auto-titrating mode was set between 4 and 20cmH ₂ O. The specialist nurse reviewed the CPAP machine computerized data.	The manual laboratory CPAP titration during PSG was undertaken the night after the diagnosis. Manual technician-observed titration of CPAP pressure to abolish snoring, oxygen desaturation, and apnea and hypopnea. Sleep specialists supervised and reported the PSGs.
Berry 2008	Portable monitoring device used for diagnosis is a 4-channel device based on the peripheral arterial tone with 3 additional channels. Patients took the APAP device home and wore it for 2-3 nights. The device was returned and information transferred to a computer for analysis.	PSG was performed using standard techniques, and data were recorded digitally with continuous video and audio monitoring by the technologist. During CPAP titration, the flow, leak, and pressure signals were also recorded.
Kim 2015	Were given a portable-channel sleep-monitoring device, which was taken home. Auto-titration CPAP machines were provided to use at home for 5-7 nights.	Attended overnight PSG in an accredited sleep laboratory, followed by a second attended overnight PSG for titration with CPAP.

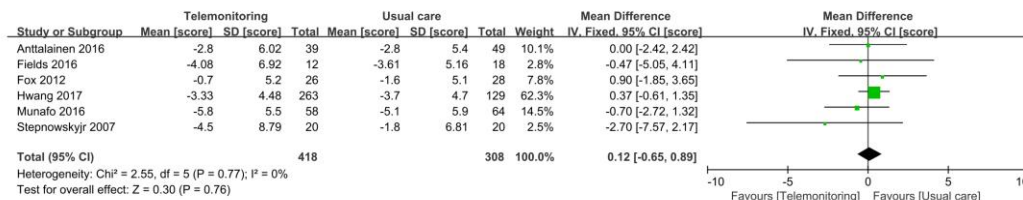
Kuna 2011	With a type 3 portable monitor. Individuals with an AHI of 15 events/h or more were schedule for a 4- to 5-day home automatically adjusting CPAP titration study. The pressure selected for CPAP treatment was the pressure below which the participant spent 90% of the time and at which the reported AHI was not more than 10 events/h.	Patients were scheduled for a PSG in the sleep center. A split-night PSG was performed. The pressure selected for treatment was the lowest pressure associated with an AHI not exceeding 10 events/day
Mulgrew 2007	The AutoSet Spirit was set to autotitrate at pressure between 4 and 20 cmH ₂ O. After being used for 1 week, the ResMed Autoscan was interrogated for efficacy data. The final pressure was set on day 14 by the CPAP coordinator in consultation with the study physician.	A trained technologist supervised PSG. CPAP was determined according to a standard protocol during a CPAP titration PSG performed on the following night.
Rosen 2012	Devices were either returned by the participant or directly retrieved by a courier service in the morning after use, depending on local preference.	Underwent an attended PSG for diagnosis and PAP titration.
Skomro 2010	All subjects with an RDI>5 were offered auto-CPAP therapy for 1 week followed by fixed-pressure CPAP based on the auto-CPAP P95	A split-night PSG with CPAP titration was performed if there was evidence of at least moderate OSA during the diagnostic process.

CPAP: continuous positive airway pressure; AHI: apnea and hypopnea index; PSG: polysomnography

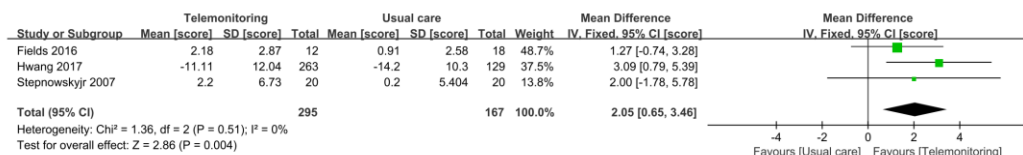


Events: the number of CPAP compliant (>4h) patients

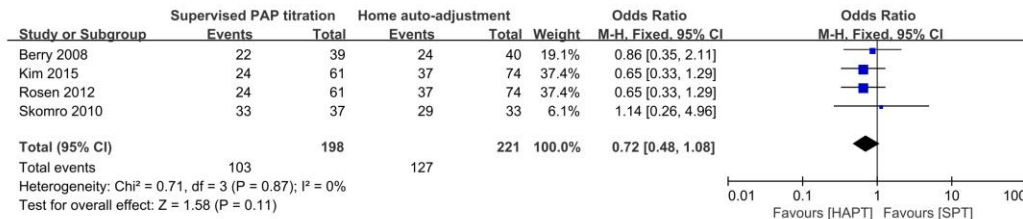
Supplementary Figure 1. The rate of CPAP compliant (>4h) patients comparing telemonitor care with usual care in OSA patients



Supplementary Figure 2. The change of Epworth Sleepiness Scale (score) comparing telemonitor care with usual care in OSA patients

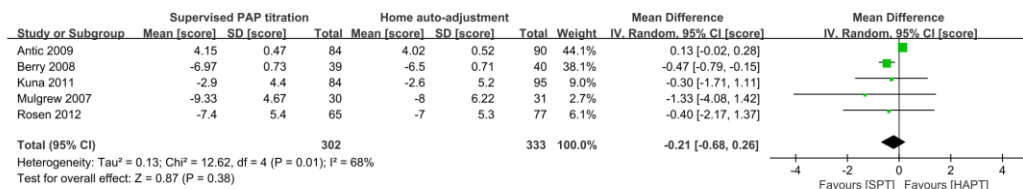


Supplementary Figure 3. The change of Functional Outcomes of Sleep Questionnaire (score) comparing telemonitor care with usual care in OSA patients

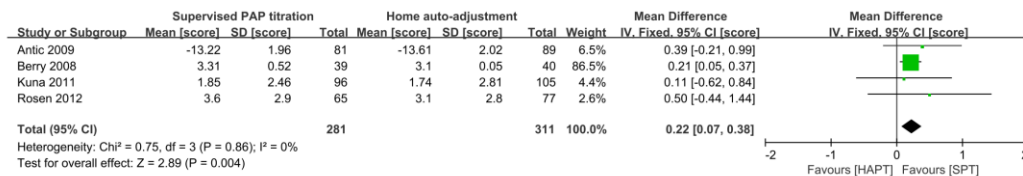


Events: the number of CPAP compliant (>4h) patients

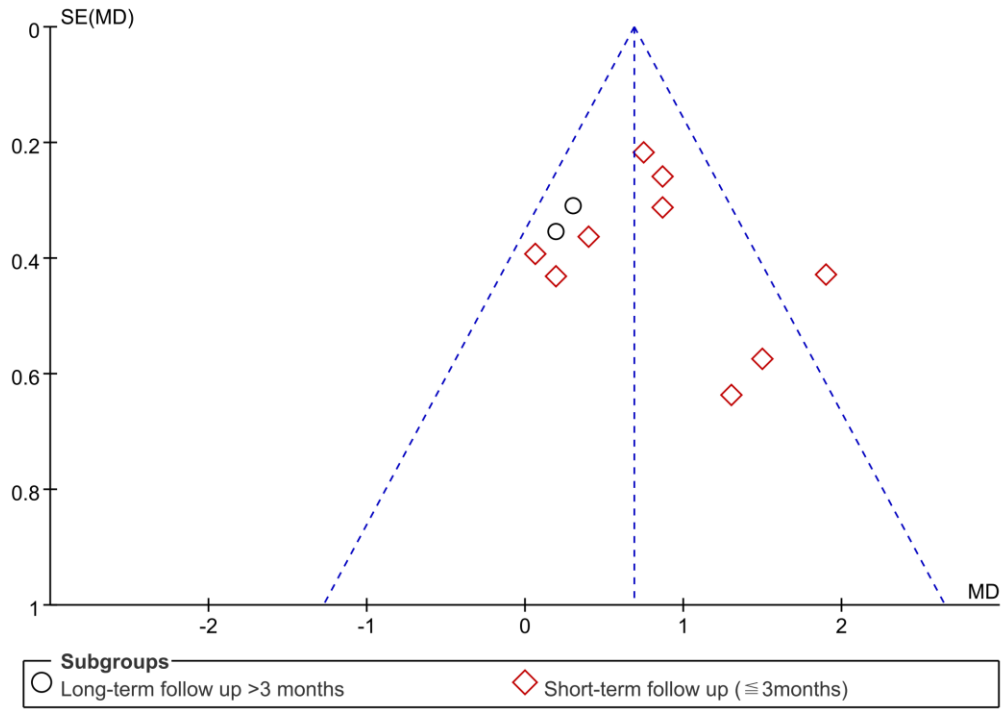
Supplementary Figure 4. The rate of CPAP compliant (>4h) patients comparing supervised PAP titration with home auto-adjusting pressure titration in OSA patients



Supplementary Figure 5. The change of Epworth Sleepiness Scale (score) comparing supervised PAP titration with home auto-adjusting pressure titration in OSA patients



Supplementary Figure 6. The change of Functional Outcomes of Sleep Questionnaire (score) comparing supervised PAP titration with home auto-adjusting pressure titration in OSA patients



Supplementary Figure 7. Funnel plot of CPAP compliance (telemonitor care vs. usual care)