



# Effects of Self-management Education Programme in improving Self-efficacy of patients with Chronic Obstructive Pulmonary Disease – An Exploratory Trial.

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# Background

- Chronic obstructive pulmonary disease (COPD)
  - **top ten** causes of mortalities (SSM, 2008a, SSM, 2011)
- COPD cannot be cured, but can be **prevented** and **treated**  
(ATS 2009, GOLD 2008, Reid & Innes 2010)
- Converging evidence demonstrated that SMEP can impact positively on **self-efficacy** which influences and mediates the change in health-related behaviours (Horne and Weinman, 2002, Kohler et al., 2002, Lau-Walker, 2006, Lorig et al., 2001)
- In Macau, healthcare service provision in relation to COPD patients is mainly focused on acute management.



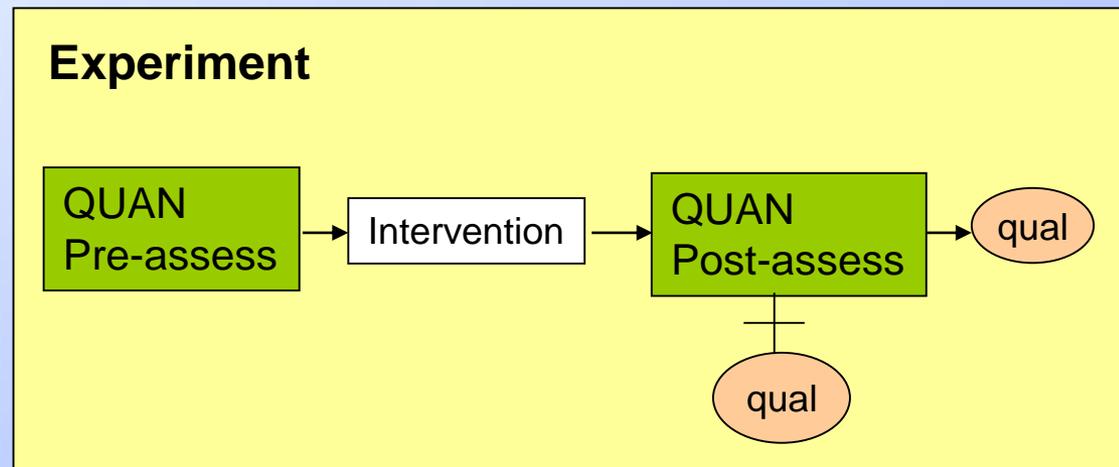
# Research Design

**Aims:** To compare the self-efficacy of Macau COPD patients before and after implementation of self-management education programme (SMEP)

A mixed methods approach embedded within an experimental design → **QUAN(+qual)** (Creswell and Plano Clark, 2011)

## Methodology

- 1) Exploratory RCT  
(MRC 2008)
- 2) Mixed methods



# Protocol of Self-management Education Programme (SMEP)

Before Validity Testing		After Validity Testing	
Workshop/ duration	Content	Workshop/ duration	Content
1 (1.5 hrs)	<p>Topic 1–6 Information about nature of COPD</p> <p>Topic 7-11 Use of difference inhalers</p> <p>Topic 12 Monitoring and identifying exacerbations</p> <p>Topic 13 Recording of exacerbations</p>	1 (1.5 hrs)	<p>Topic 1–6 Information about nature of COPD</p> <p>Topic 7-11 Use of difference inhalers</p> <p>Topic 18 Action plan (short-acting bronchodilators administration only)</p> <p>Topic 27 Response to exacerbations at night</p> <p>Topic 12 Monitoring and identifying exacerbations</p> <p>Topic 13 Recording of exacerbations</p>
2 (1.5 hrs)	<p>Topic 14-17 Breathing exercises</p> <p>Topic 18 Action plan</p>	2 (1.5 hrs)	<p>Topic 14-17 Breathing exercises</p> <p>Topic 19-23 Coughing techniques</p> <p>Topic 24 Relaxing exercise</p> <p>Topic 25-26 Energy saving technique</p>
3 (1.5 hrs)	<p>Topic 19-23 Coughing techniques</p> <p>Topic 24 Relaxing exercise</p> <p>Topic 25-26 Energy saving technique</p> <p>Topic 27 Response to exacerbations at night</p>	3 (1.5 hrs)	<p>Topic 28-30 Diet and pulmonary health (including Chinese home-made soup)</p> <p>Topic 31 Smoking Cessation</p> <p>Topic 32 Vaccination</p> <p>Topic 33-35 Managing stable condition and preventing complications</p>
4 (1.5 hrs)	<p>Topic 28-30 Diet and pulmonary health</p> <p>Topic 31 Smoking Cessation</p> <p>Topic 32 Vaccination</p> <p>Topic 33-35 Managing stable condition and preventing complications</p>		



# Measures and Data Analysis

## **Quantitative Data:** COPD Self-efficacy scale (CSES)

- SPSS 13.0 software
- Percentage, mean and standard deviation for descriptive data
- Mann-Whitney U-Test and Wilcoxon signed ranks tests for inferential statistics.

## **Qualitative Data:** Thematic analysis

**Data Mixing:** Connecting both findings  Meta-inferences  
(Creswell and Plano Clark, 2011)

# Research Flow

## Inclusive criteria of sampling

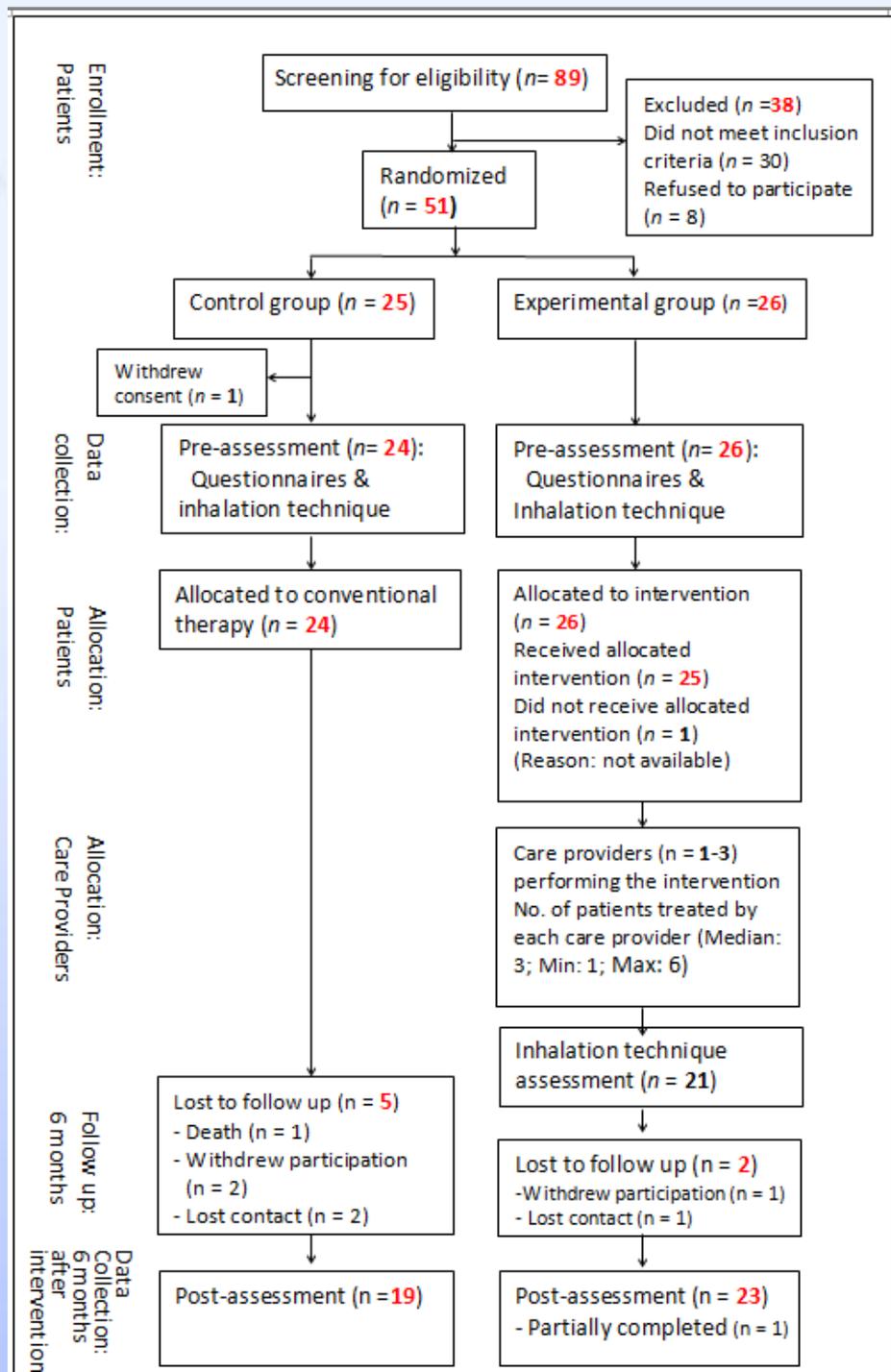
• Post-bronchodilator FEV<sub>1</sub> of stage II, III and IV COPD stated by GOLD in 2008, measured by the same validated spirometry.

Method: Purposive sampling

Number of focus groups: 3

Participants: 7 males and 4 females

- emphysema, chronic bronchitis and the chronic asthmatic condition that their airflow limitation is not fully reversible.
- concomitant diseases and conditions are included as long as the patients are not in the acute stage of those diseases/conditions at the time of recruitment.
- 40 years old or above.
- understand Cantonese and communicate in written Chinese.
- Participants' informed consent
- stable stage of their disease and approved by their attending doctor.







# Results

The score of total CSES and its subgroups and baseline comparison of experimental and control group

Subgroup	Tier 0		Z	P-value	
	All samples (n=48)	Median (range)			
	Mean (SD)	SMG (n=25)	CG (n=23)		
Negative affect	3.23 (0.63)	3.10 (2.90-3.60)	3.40 (2.60-3.90)	-0.73	0.47
Intense emotional arousal	3.30 (0.61)	3.10 (2.95-3.65)	3.40 (3.00-4.00)	-1.04	0.30
Physical exertion	2.64 (0.66)	2.80 (2.20-3.00)	2.60 (2.20-3.00)	-0.35	0.72
Weather/ Environment	3.17 (2.51)	2.80 (2.20-3.10)	3.00 (2.30-3.50)	-1.13	0.26
Behavioral risk factors	3.25 (0.76)	3.00 (3.00-3.50)	3.00 (2.50-4.00)	-0.72	0.47
Total CSES score	3.14 (0.79)	3.00 (2.70-3.35)	3.30 (2.60-3.60)	-0.86	0.39

## Comparison of mean differences in self-efficacy scores between baseline and post-test follow-up assessment

Subgroup	SMG			CG		
	Median(range#)		Z	Median (range#)		Z
	T0 (n=25)	T2 (n=23)	(P-value)	T0 (n= 23)	T2 (n=18)	(P-value)
Negative affect	3.10 (2.90-3.60)	3.55 (3.10-4.00)	-1.81 (0.07)	3.40 (2.60-3.90)	3.60 (3.23-4.00)	-1.60 (0.11)
Intense emotional arousal	3.10 (2.95-3.65)	3.70 (3.10-4.10)	-2.54 <u>(0.01)*</u>	3.40 (3.00-4.00)	3.75 (3.00-4.03)	-0.71 (0.48)
Physical exertion	2.80 (2.20-3.00)	3.00 (2.20-4.00)	-2.57 <u>(0.01)*</u>	2.60 (2.20-3.00)	2.80 (2.55-3.40)	-0.83 (0.41)
Weather/ Environment	2.80 (2.20-3.10)	3.50 (2.70-4.0)	-2.63 <u>(0.008)**</u>	3.00 (2.30-3.50)	3.10 (2.45-3.55)	-0.36 (0.72)
Behavioral risk factors	3.00 (3.00-3.50)	3.50 (2.88-4.00)	-1.18 (0.24)	3.00 (2.50-4.00)	4.00 (3.00-4.00)	-0.63 (0.53)
Total CSES score	3.00 (2.70-3.35)	3.50 (3.00-4.00)	-2.44 <u>(0.015)*</u>	3.30 (2.60-3.60)	3.40 (2.90-3.73)	-1.00 (0.32)

# Interquartile range

\* P-value <0.05; \*\* P-value < 0.01



# Discussion (1)

- Bucknall et al. (2012) and Lemmens et al. (2010) indicated no evidence about improvement of self-efficacy through self-management education.
- However, several COPD studies have demonstrated varying aspects of self-efficacy improvement for patients (Kara and Aşti, 2004, Wong et al., 2005, Stellefson et al., 2012, Davis et al., 2006).
- Lorig and Bandura (2001) and Siu et al. (2007) achieved improvement of self-efficacy in managing chronic illness, these findings are consistent with the findings of this study.
- Discrepancies among may be attributed to the lack of standardization for the content or structure of self-management education, different measurements used for self-efficacy assessment (Stellefson et al., 2012).



# Discussion – Meta-inferences

In Quantitative findings, participants express adequate confidence in encountering or avoiding difficulty in breathing when they had adverse intense emotion. This concept emerged among participants in a focus group:

- *G3.2: I don't have those emotions, I'm not anxious, I'm not so..*
- *[G3.1: (hehehe) G3.2 is similar with me, I'm not anxious too]*
- *G3.2: ...I don't even have pressure, I have nothing of so.*
- *[G3.2: (laugh gently)]*
- *[G3.1: I only have problem when I climb up staircases, I would wheeze a bit ....quite a bit when I carry heavy stuff.]*
- *Moderator: That means you don't have problem with emotion.*
- *G3.1: I don't have temper (haha)*
- *Moderator: is calm....no temper..*
- *G3.1: I don't have temper (hehe) [C343,GD]*

In this stance, the improvement of self-efficacy in managing intense emotion in the participants was not merely the effects of SMEP, but their personal attitude also played a part.



# Discussion – Meta-inferences

Secondly, the experimental group in this study reported higher levels of confidence after receiving SMEP in relation to avoiding breathing difficulties during physical exertion than before the education.

- *G2.1: After you've learnt, it helped you breath, then followed exactly...ha...the instructor's lesson, then I can do that, can breath. Then afterward, anyway I breath usually every day as well, at night also...at night, wake up I breath like this...practised like this, sometimes practiced like this during walking, then..it is indeed better for the lung. Usually, I...when walked around....not even for half a floor, now I can walk for around 4,5 floors.*
- *[G2.4: Not really...those stuffs about breathing is really helpful]*

➡ Similar performance of doubled stair climbing was also indicated in the participants of another educational intervention for COPD patients (Kara and Aşti, 2004).

➡ A study of Chinese COPD patients also indicated that social coping strategies could help an individual reduce their psychological distress and increase their psychological well-being (Hsu et al., 2008). Therefore, functional improvement can make much difference in COPD patients.



# Discussion – Meta-inferences

Our quantitative findings demonstrated that more confidence in the participants to avoid the adverse effects of weather changes and environmental triggers after the SMEP.

➡ Given that part of the teaching content of the SMEP focused on specific coping strategies towards dealing with weather changes or environment hazards, the patients may have learned and put into daily practices.

• *G2.3: For me I mainly followed the instruction for breathing, and also to avoid... mean those tobacco, or those temples, or those car park, those related to exhaust, tried hard to avoid all these factors. [B296,489,15]*

➡ This can be explained as self-efficacy governs the interrelationship between knowledge and action (Bandura, 1986).



# Discussion – Meta-inferences

However, the participants also believed that the impact of self-management varied from person to person in accordance with the individual's concept or philosophy of health and health maintenance.

• *G2.4: My stomach can't tolerate food in cold nature, it means the food like melons those people, some people said, papaya is good for some diseases like having constipation, I can't take those. Also like banana, both food are not suitable to me, my body is like this.*

*[B245,299,22]*

- ➡ Generally Chinese people in Macau have a mixture of ideas from the Western Medicine and Traditional Chinese Medicine (TCM).
- ➡ Obviously, G2.4 adopted the Yin-Yang theory of TCM, according to which cold and heat properties can help to regulate the pathophysiological condition of the body (Yin et al., 2012).
- ➡ Individual difference would induce varied effect even with the same diet.
- ➡ The adoption of self-management might vary from person to person under this cultural influence.



# Conclusion

- Critical role of SMEP in COPD intervention.
- SMEP can improve self-efficacy in managing intense emotions, physical exertion and weather/environment effects and then general self-efficacy
- Participants appreciated their improvement in tolerating physical exertion when they applied controlled breathing
- Intriguingly, individual perceptual constancy of patients could also be the determining factors modulating the effectiveness of SMEP.



# Conclusion

(Cont.'d.)

- Investigation of such cultural effects in SMEP will be useful to further adjust our program.
- Chinese population of COPD patients in Macau can be benefited from SMEP.
- SMEP as an initiative step to the continual intervention process is recommended.
- The findings provide fundamental evidence for supporting further large scale RCT for COPD patients
- Implications for other chronic diseases



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*Thank You !!*