Respondents believe it is important to support smoking cessation for the parents of their patients but are likely to perceive the barriers to this as arising from the smokers more than from deficiencies in their own knowledge and skills (see Table 1). However, we identified significant knowledge gaps. When asked if 7 facts about SHS and cessation were true or false, incorrect answers ranged from 2–41% and 'don't know' from 10–46%. Only 41% knew how to make a referral to their local cessation service. 63% of respondents last had training about smoking cessation more than 5 years ago.

Abstract S125 Table 1 Respondents' assessment of the impact of parental smoking and barriers to aiding with smoking cessation, where 0 = no impact or not a barrier and 10 = very significant impact or barrier

	Mean (range)
How much of an impact do you think parental smoking has on children's current respiratory health?	8.54 (5–10)
How significant is the impact of parental smoking on a child's overall health later in life?	8.20 (3–10)
How significant do you think is the impact of a parent stopping smoking on their child's current respiratory health?	8.59 (2–10)
It is not worthwhile to try and change smoking behaviours as the chance of making an impact is so small	2.64 (0–9)
You lack knowledge or information to explain to parents how SHS exposure can affect their child's health	3.10 (0–10)
You lack motivational interviewing (or similar) skills to help smokers see how they could change their behaviour	5.21 (0–10)
Smokers may become defensive or aggressive if given advice about the consequences of smoking or the benefits of stopping smoking	6.28 (0–10)
Smokers are not willing to accept that their behaviour has health consequences	6.16 (0–10)
Smokers are not motivated to stop smoking	6.28 (0–10)
Many smokers have other, more significant challenges, to deal with such as: mental health problems, social isolation, poverty, under-employment, insecure housing etc.	6.47 (0–10)

Conclusions Our findings show that Child Health Professionals' beliefs about the impact of smoking and the importance of smoking cessation are not borne out in their practice. This is likely to be due to a lack of knowledge and training, despite the existence of high quality and easily accessible national resources.[1] We believe that every Child Health organisation should appoint smoking cessation champions who can build links with local specialist services in order to promote training and good practice among their colleagues.

REFERENCE

1 National Centre for Smoking Cessation and Training (NCSCT). http://www.ncsct.co.uk

S126 HOW DOES KNOWLEDGE, PERCEPTIONS AND ATTITUDES TOWARDS SHISHA PIPE SMOKING VARY AMONGST UNIVERSITY STUDENTS?

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Background and introduction Despite clear evidence for the harms of shisha pipe smoking (SPS) its use is increasing amongst university students worldwide. This review explores the evidence for the reasons behind this trend by considering students' perceptions, attitudes towards and knowledge of SPS.

Review question 'How does knowledge, perceptions and attitudes towards SPS vary amongst university students?'

This question will examine the rationale for students' shisha use and address their perceptions regarding its addictive properties.

Literature searches Three electronic databases were accessed: MEDLINE, EMBASE and CINAHL. Examples of search terms included "shisha" (and its alternatives), "university", "perceptions".

Inclusion criteria

1. January 1990–April 2016
2. English language
3. Human studies

57 articles were initially identified, with 21 articles included in the final review after abstract and full-text screening.

Throughout this process, three common themes emerged

Reasons for and attitude towards SPS.

Perceptions regarding health hazards of SPS.

Perceptions regarding addictive properties and ability to quit SPS.

Each theme was explored in detail, in order to answer the review question.

Review findings

Socio-cultural and peer influences are major contributors in students initiating SPS.

SPS 'addiction' has two components: physiological and social. This is compounded by the general perception that SPS is a safer, i.e., less harmful and addictive, and sociable alternative to cigarette smoking.

Students believe quitting SPS is 'easy', yet few are able to do so successfully.

Conclusion Policy change is fundamental in tackling the SPS pandemic amongst university students. Interventions, within institutions directly or via social media campaigns, must de-glamorise shisha and highlight its harmful effects. Prior to this, additional longitudinal studies are necessitated to build on existing cross-sectional data and understand temporal changes in students' beliefs to allow better, targeted health promotion.

S127 EFFECT OF CANNABIS SMOKING ON THE DEVELOPMENT OF BULLOUS LUNG DISEASE: A STRUCTURED LITERATURE REVIEW

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Background With increasing cannabis use, physicians need to know more about its respiratory effects. However, there are few long term studies of cannabis smoking, mostly due to legality issues and the confounding effects of tobacco.

Aims We reviewed the effect of chronic cannabis use on bullous lung disease.

Methods 18 out of 69 English-language publications, prior to April 2016, from MEDLINE, Scopus, and Web of Science

Abstract S127 Table 1 Summary of case studies and case series associating cannabis smoking and bullous lung disease

Author (Year)	Subjects (n)	Mean Age	Marijuana Smoking	Tobacco Smoking (pack years)	Results
Feldman *et al.* (1993)	1	24	14-28g/week for 10 years	14	Spontaneous pneumothorax. Microscopy showed ruptured bulla, serosal adhesions and focal atelectasis.
Johnson *et al.* (2000)	4	38	2 joints/week to 3 joints/day	3 to 15	Bilateral upper zone peripheral bullae in all 4 cases. 1 with paraseptal, and 2 with apical bullous emphysema
Rawlins *et al.* (2001)	2	29	Yes*	Yes*	Bilateral giant lung bullae and severe upper lobe emphysema.
Thompson *et al.* (2002)	3	39	Moderate' for 10 years to 'heavy' for 24 years	9 to 20	Large upper lobe bullae.
Phan *et al.* (2005)	1	26	10 pipes a day for 5 years	1	Bilateral cystic and bullous changes in lower lobes. Microscopy showed fibrosis and macrophage infiltration.
Beshay *et al.* (2007)	17	27	53 joint years	0 to 25	Multiple apical bullae or bullous emphysema in upper lobes. Histology showed macrophages.
Hii *et al.* (2008)	10	41	11 to 149 joint years	1 to 27	Asymmetrical bullae peripherally and centrally in upper and mid zones.
Reece (2009)	1	56	10 cigarettes/day for 25 years	>1	Mixed tobacco and cannabis in joint. Multiple giant lung cysts on CT scan, no lobe predominance.
Gao *et al.* (2010)	1	23	Yes*	None	Cystic fibrosis. Bilateral large upper lobe bullae. Recurrent pneumothorax.
Allen (2010)	1	18	1 oz weekly for 4 years	3	Bilateral apical bullae up to 3 cm. Histology showed emphysematous changes with pigmented macrophages and DIP-like changes.
Shah *et al.* (2011)	1	27	"Heavy" use for 10 years	20	Large left apical bulla and right apical blebs. CT scan following chest drain of pneumothorax.
Sood *et al.* (2011)	1	33	"Off and on" for 10 years	15	VLS on the left side shown on chest X-ray and CT scan.
Gargani *et al.* (2011)	2	41	Yes*	N/A to 39	One patient had left apical bullae, the other had right upper and middle lobe bullae. In both patients, one bulla contained *Aspergillus.*
Golwala (2012)	1	25	24 joint years	1	Bilateral bullae with upper lobe predominance. Previous untreated sarcoidosis but no current clinical/radiological features.
Tashtoush *et al.* (2014)	1	65	"Heavy " use for 20 years	None	Poorly controlled AIDS and previous IV heroin use. Bilateral large lung bullae characteristic of VLS.
Fiorelli *et al.* (2014)	8	30	7 joints/week to 6 joints/day	15 to 40	8 of 13 marijuana smokers with spontaneous pneumothorax had bullae on CT scan. 6 had paraseptal bullae, 2 with upper lobe involvement.
Cary *et al.* (2015)	1	48	86 joint years	25	Bilateral upper and mid zone bullous disease. Air fluid level seen on left lung bulla. Sputum grew only Candida, no clinical signs of infection.

CT: computerized tomography; DIP: desquamative interstitial pneumonia; VLS: vanishing lung syndrome; AIDS: acquired immunodeficiency syndrome; IV: intravenous. *: Undocumented amount

databases, which reported bullous lung disease in cannabis users, were examined. Case reports and case series were included.

Results The only cross-sectional study reported an increase in the rates of macroscopic emphysema in tobacco only (17 of 92) and tobacco + cannabis smokers (15 of 91), but not in cannabis only smokers (1 of 75) compared to non-smokers.1

The remaining case series and case reports described a total of 56 marijuana smokers presenting with bullous lung disease, often with pneumothorax and predominantly upper lobe involvement (Table 1). Concurrent tobacco smoking was present in all but 3 cases. The majority of cases reported heavy cannabis use, though direct comparison was difficult due to variation in usage measurements. All 4 case series that measured lung function reported normal findings.

Conclusions While the clinical association of cannabis smoking and peripheral lung bullae is well recognised (and consequently often not reported) there is scant documentation in the literature correlating marijuana smoking with bullous lung disease.

REFERENCE

1 Aldington S, *et al*. Effect of cannabis on pulmonary structure, function and symptoms. *Thorax*. 2007;**62**(12):1058–63.

Novel Approaches to Lung Cancer Screening

S128 LUNGSEARCH: A RANDOMISED CONTROLLED TRIAL OF SURVEILLANCE FOR THE EARLY DETECTION OF LUNG CANCER IN A HIGH RISK GROUP

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Screening for the early detection of lung cancers should increase the percentage of operable tumours, thus improving cure rates. A large randomised US trial showed that CT screening moderate/heavy smokers is effective but expensive, with a high false-positive rate. We designed LungSEARCH in 2006 to target screening in higher-risk subjects. Because most tumours in the UK were of squamous-histology, we hypothesised that sputum cytology plus cytometry would be an effective initial screen, only offering more intensive/expensive tests to those with abnormal sputum.

Eligibility criteria were: current/former smokers (≥20 pack-years and/or smoked ≥20 years), GOLD-defined COPD, no prior cancer. Subjects were randomised to surveillance or a control group, and each followed for 5 years. Screened subjects provided sputum for central assessment, and those with abnormal results (cytology: low/high-grade squamous intraepithelial lesions, and/or cytometry: abnormal ploidy) were referred for annual low-dose CT and autofluorescence bronchoscopy (AFB) for the remainder of the trial, with diagnostic investigations when cancer suspected by abnormal CT/AFB. Sputum-negatives provided annual sputum samples only. Control subjects had a chest X-ray when they reached 5 years. Primary objective: to show a higher proportion of early stage cancers using surveillance than controls.

1568 subjects were recruited (target 1300) from GPs or chest clinics around 10 UK centres (August 2007–March 2011): 785 screened, 783 controls. Mean age 63 years; males 52%; current (56%), former (44%) smokers; mild (25%), moderate (75%) COPD; from GPs (79%). >90% screened subjects provided sputum samples in their first year. After 5 years, the overall sputum-positive rate is 33%; 30% (236/785) had a CT scan and 25% (193/785) had an AFB at any time. Of those who had a CT scan 19% (45/236) were abnormal (lung nodule(s) ≥9 mm); and of those who had AFB 3% (5/193) had severe dysplasia or worse.

79 lung cancers have been identified to date via the centres/national registry: 43 surveillance and 36 control. But awaiting staging details for 6 surveillance and 14 control cases. Preliminary results are promising: 57% (surveillance) versus 41% (controls) of cancers were diagnosed with stage I/II non-small-cell-lung cancer or limited disease small-cell-lung cancer. Final data available later in 2016.

S129 WHAT PROPORTION OF PATIENTS WITH LUNG CANCER WOULD HAVE BEEN ELIGIBLE FOR CT SCREENING ACCORDING TO VARIOUS PROPOSED INCLUSION CRITERIA?

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Abstract The US National Lung Screening Trial (NLST) identified persons for lung cancer screening by age (55–74 yrs) and smoking history, but a subsequent analysis of the US SEER database showed that only 26.7% of lung cancer cases would have been eligible for screening according to these criteria.

Strategies to increase the proportion of lung cancer patients who might qualify for screening include increasing the upper age limit to 80 years (endorsed by the US Preventative Services Task Force – USPSTF), and using composite lung cancer risk prediction tools. The UK Lung Screening pilot (UKLS) used the Liverpool Lung Project score (LLP) to identify patients for screening. In a validation cohort from the US Prostate, Lung, Colorectal and Ovarian study, a threshold based on the $PLCO_{M2012}$ score identified more cancers than the NLST criteria. We prospectively compared these criteria for the first time in patients presenting with lung cancer in Yorkshire.

Methods We audited the proportion of patients presenting with lung cancer through fast-track clinics at 4 Yorkshire centres who would have been eligible for screening according to the following

Abstract S129 Table 1 The numbers and proportions of lung cancer patients who would have been eligible for CT screening according to various inclusion criteria

Criteria	Descriptor	Number of eligible patients	Proportion of all lung cancer patients	Proportion of 55–80yrs ever-smoking patients
NLST	Age 55–74, ≥30 pack years smoking, quit time <15 years	71	34.5%	51.1%
USPSTF	Age 55–80, ≥30 pack years smoking, quit time <15 years	89	43.2%	64.0%
UKLS	Age 50–75, ≥5% lung cancer risk by LLPv.2	67	32.5%	48.2%
PLCO ≥1.51%	Age 55–80, ≥1.51% lung cancer risk by $PLCO_{M2012}$	111	53.9%	79.9%
LLP ≥5%	Age 55–80, ≥5% lung cancer risk by LLPv.2	94	45.6%	67.6%