Vered MP*, Kedem R*, Tzur D*, Even YH*, Chapman S#. Self-reported difficulty of smoking cessation among ex-smokers in the Israel Defense Force (IDF) career service personnel: observational study.

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ABSTRACT

Introduction
The smoking cessation literature focuses on assisted cessation despite evidence that most ex-smokers stopped without assistance. Professional literature, clinical guidelines and tobacco control policies suggest that smoking cessation is difficult especially if unassisted. We investigated under-researched aspects of unassisted smoking cessation, focusing on self-reported difficulty.

Methods
Between September 2013 and June 2015 all ex-smokers amongst IDF career personnel undergoing periodic medical examination completed a computerized questionnaire assessing their smoking cessation experience. Subjects were classified into two groups: those who found cessation difficult and those who did not. Socio-demographic characteristics and questionnaire responses were then compared.

Results
Of 1574 ex-smokers, 83.4% reported unassisted cessation. Cessation was reported as harder/much harder than expected by 7.1%, easier/much easier than expected by 50.0%, and as expected by 42.8%. Bedouin Israeli ex-smokers were significantly more likely than Jewish Israeli ex-smokers to report difficulty in smoking cessation (31.6% versus 6.9%, p=0.001). Ex-smokers who reduced smoking gradually before cessation were significantly more likely to report difficulty than those who stopped abruptly (10.2% versus 6.5%; p=0.025.) Ex-smokers who stopped within the last 6 months were significantly more likely to report difficulty than those who stopped over 6 months ago (13.6% versus 6.4%; p=0.025). This "memory decay" effect did not persist beyond 6 months.

Cconclusions
The majority of ex-smokers stopped smoking unassisted and did not find cessation difficult, while 50.0% found it easier than expected. Further studies of successful cessation experiences of ex-smokers are warranted.

Implications – what this study adds
The smoking cessation literature and policies focus on assisted cessation and tend to accept that cessation is difficult, especially when unassisted, despite the paucity of research on unassisted smoking cessation and lack of objective evidence that cessation is difficult.
Most ex-smokers in our study did not report cessation as difficult and 50.0% reported it was easier or much easier than expected. Unassisted cessation, employed by 83.4% of ex-smokers in our study, was not found to be more difficult than assisted cessation. The message that smoking cessation is often easier than expected may help smokers and health professionals promoting cessation.

INTRODUCTION

The smoking cessation literature focuses mainly on assisted cessation [1,2] while surveys of ex-smokers in several countries repeatedly show large majorities stop without assistance on their final successful attempt, making the population impact of unassisted cessation far greater than that of assisted cessation.[1, 3-5]

However, tobacco control policies usually encourage smokers to seek cessation assistance, with professional literature, clinical guidelines and the media discouraging unassisted cessation, suggesting that chances of succeeding alone are slim, that smoking cessation is difficult and that medication and professional supervision are essential.[1, 2] Unassisted cessation is generally only mentioned disparagingly, for example in the 2012 campaign promoted by several English National Health Service Trusts entitled "Don't go cold turkey."[6-10] However a 1983 British study reported that 53% of 593 ex-smokers described stopping as "not at all difficult" and 27% said it was "fairly difficult".[11] Since then there has been a lack of studies supporting or refuting the widespread claim that smoking cessation is difficult.[2]

To investigate under-researched aspects of the unassisted smoking cessation experience, with a focus on self-reported difficulty of smoking cessation, we surveyed ex-smokers in Israel Defence Force (IDF) career army personnel. This population has relatively easy access to pharmacological and behavioural assisted cessation interventions, which are recommended by the Israel Health Ministry guidelines and actively promoted and provided free of charge by the IDF health services.[12]

METHODS

Participants

All personnel remaining in the IDF beyond the period of mandatory military service are periodically examined at the IDF Medical Corps Staff Periodic Examination Center, from approximately 30 years of age until compulsory military retirement generally around age 45.

Data collection

At each periodic examination participants complete a computerised questionnaire including demographic and medical information. Between 1 September 2013 and 30 June 2015 all participants reporting they were former smokers answered additional questions about whether cessation was abrupt ("cold turkey") or whether they reduced smoking gradually before cessation, and about how and when they stopped. Options for 'how' included 'unassisted' or various forms of assistance (table 1). They were asked to rate difficulty experienced in cessation: 'much harder than expected', 'harder than expected', 'as expected', 'easier than expected' or 'much easier than expected'. They were also asked how many times they had tried to stop.

This study was approved by the IDF institutional review board in February 2015, approval no. 1501-2015.

Data analysis
Subjects were classified into two groups comprising those who found smoking cessation difficult (much harder or harder than expected) and those who did not (as expected, easier or much easier than expected). The two groups were compared for differences by sociodemographic and lifestyle characteristics and by answers to the other questions about smoking cessation. Pearson's Chi-Square Test was performed on the categorical variables and Fisher's Exact Test (two-tailed analysis) in instances where more than 20% of the cells had less than 5 expected observations. The Mantel-Haenszel Test for Odds Ratio Estimate was performed with confidence intervals for dichotomous outcomes for difficulty in smoking cessation. All data analysis was performed using SPSS version 21.

RESULTS

Between 1 September 2013 and 30 June 2015 the questionnaire was completed by 8533 individuals, of whom 1574 identified as former smokers (mean age 38.4 years). Table 1 shows participants' responses to questions about the experiences of smoking cessation and associated frequency of reporting difficulty in cessation for each response.
Bedouin ex-smokers (all male) were significantly more likely to report difficulty in smoking cessation than Jewish ex-smokers (the majority ethnic group); 31.6% versus 6.9%, p=0.001; odds ratio (OR) for reporting cessation was difficult: 6.210; 95% confidence interval (CI): 2.311-16.689. There was a non-statistically significant trend where men were more likely to report difficulty in cessation than women; 7.5% vs 3.4%, p=0.088; OR: 2.814; 95% CI: 0.916-5.694. There was a significantly greater chance of ex-smokers reporting difficulty in cessation if they reduced smoking gradually before cessation than if they stopped abruptly ("cold turkey"); 10.2% versus 6.5%, p=0.025; OR :1.642; 95% CI: 1.042-2.587. There was a significantly greater chance of ex-smokers reporting difficulty in cessation if they stopped within the last 6 months than if they stopped over 6 months ago; 13.6% versus 6.4%, p=0.025; OR: 2.306; 95% CI: 1.389-3.828. A greater proportion of ex-smokers reported difficulty in cessation among those who stopped $\geq$3 times versus those who stopped once; 14.7% versus 4.4%, p<0.0001, OR: 3.741; 95% CI: 2.202-6.355.

The chances of reporting difficulty in cessation were slightly greater for those who stopped with assistance than those who stopped unassisted but this did not reach statistical significance ; 10.8% who stopped with pharmacological and behavioural /psychological therapy combination reported difficulty vs 6.6% of those who stopped unassisted, p=0.158, OR:1.708; 95% CI: 0.795-3.671.

DISCUSSION

Our results confirm previous findings suggesting that although assisted cessation has shown high efficacy in the setting of controlled trials, in real world settings, for a variety of reasons, it is only used by a minority of smokers seeking to quit.[5] The IDF career service personnel population have relatively easy access to pharmacological and behavioural assisted cessation interventions, which are actively promoted and provided free of charge. Substantial resources

are invested by the IDF and health authorities in Israel and around the world in promoting assisted cessation. Yet of the 1574 individuals surveyed, 83.4% reported unassisted cessation, a finding similar to that of a 2010 survey by the Israel Central Bureau of Statistics where about 90% of ex-smokers from the general Israeli public reported stopping unassisted.[13] Our most noteworthy finding is that only a minority of ex-smokers (7.1%) reported that cessation had been more difficult or much more difficult than expected. Exactly half (50.0%) reported that cessation was easier or much easier than expected, while the remaining 42.8% reported that it was as expected.

The greater likelihood of reporting difficulty in smoking cessation amongst ex- smokers of Bedouin ethnicity (all male) than amongst those of other ethnic backgrounds may be related to the high prevalence of smoking in this population. (Smoking rates in 2013 were 46.6% amongst Arab Israeli men, 23.1% amongst Jewish Israeli men, 14.0% amongst Jewish Israeli women and 6.1% amongst Arab Israeli women.)[13]

Despite the common assertion in the smoking cessation literature that unassisted cessation is particularly difficult, ex-smokers who stopped unassisted were not more likely to report difficulty than those who stopped with assistance. There was even a statistically non-significant trend towards less reports of difficulty among those stopping unassisted.
It is possible that a memory decay effect may cause the difficulty experienced to fade from memory as time passes after smoking cessation. This may explain the statistically significant greater chances of ex-smokers reporting difficulty in cessation amongst those who stopped over 6 months ago compared to those who stopped within the last 6 months. However this trend did not continue beyond 6 months as difficulty stopping was reported by similar percentages amongst those who had stopped 6 months -1 year ago, 1-10 years ago and over 10 years ago, which did not support a significant role for a memory decay effect. This minor time decay effect does not detract from the overwhelming verdict of this population of ex-smokers that cessation was not difficult for at least half of ex-smokers, as even among the group that stopped within the previous 6 months only 13.6% reported cessation as more difficult/much more difficult than expected. It should also be borne in mind that successful smoking cessation is generally defined as cessation of at least 1 year duration. The relatively high percentage who reported difficulty in cessation in the group who stopped under 6 months ago may have been an artefact arising from the presence of individuals who did not successfully achieve long term cessation within this group.

It was intuitively unsurprising that the percentage of ex-smokers reporting difficulty in stopping increased with the number of quit attempts as it is likely that those who required several quit attempts found it harder.

Limitations
While we dichotomised ex-smokers into two groups: difficult (much harder or harder than expected); and not difficult (as expected, easier or much easier than expected), in hindsight, the "as expected" option was ambiguous and could have been selected by both those who expected quitting to be either hard or easy. If we set aside those who answered "as expected" because of this ambiguity, we nonetheless see that 50% of ex-smokers reported cessation as

being either easier or much easier than expected compared to only 7.1% who found it harder or much harder than expected, a seven-fold difference.
Because ex-smokers by definition have succeeded in quitting, our findings cannot be generalised to the experience of all smokers who have tried to quit because those who failed to stop would be highly likely to contain many who would describe attempting to quit as difficult or very difficult.

Those who opted to answer "as expected" could have chosen to answer one of the harder or easier options, but did not. For this reason, it seems reasonable to suppose that most would have understood "as expected" to mean that their quitting experience was neither harder nor easier than expected, although logically this could still mean that some found it harder (or easier) than expected. Nonetheless, it remains the case that a minimum of 50% of all ex-smokers reported quitting as being easier or much easier than expected.

Our method of classifying subjects into two groups representing those who found smoking cessation more difficult than expected and those who did not was convenient for purposes of data analysis but we were unable to address the fact that individuals' expectations are highly variable and subjective, and we did not include questions regarding what exactly the subjects' pre-cessation expectations had comprised. Indeed the fact that such a high proportion of subjects actually found cessation easier or much easier than expected could be construed as a result of the successful propagation of the "smoking cessation is very difficult" narrative via the professional literature and the media.

Other limitations of our study included the relative under-representation of women relative to the general population, resulting from their proportionate under representation within the career army personnel. Our inclusion of individuals who stopped smoking under 6 months ago may represent an additional limitation, as an unknown proportion of this group may not have achieved long term successful cessation. We did not collect data on smoking frequency per day which may have provided further important information on the characteristics of those ex-smokers who found it harder or easier to quit.

In conclusion, widespread messages encourage smokers to seek cessation assistance. The professional literature and the media tend to discourage unassisted cessation. It is generally suggested to smokers that cessation is difficult and their chances of succeeding alone are slim. Our findings appear to challenge this conventional wisdom, since in this study the majority of ex-smokers stopped smoking unassisted and did not find cessation difficult, while 50% actually found it easier than expected. This undoubtedly represents positive, good news for smokers considering cessation and raises important questions regarding tobacco control policies that generally encourage smokers to seek cessation assistance. Further and more extensive studies of the successful cessation experiences of ex-smokers would be useful to further characterise this under-studied aspect of smoking cessation and to provide assistance both to future ex-smokers and health professionals promoting smoking cessation at an individual and population level.

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DECLARATION OF INTERESTS
No conflicts of interests declared.

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Table 1: Responses to questions about the experiences of smoking cessation and associated frequency of reporting difficulty in cessation

	Number (percent) of ex-smokers	Number (percent) reporting cessation as difficult
How did you stop? **(abrupt vs gradual)**		
Abrupt cessation ("cold turkey")	1310 (83.2)	85(6.5)
Gradual reduction then cessation	264 (16.8)	27(10.2)
When did you stop?		
Within the last 6 months :	154 (9.7)	21 (13.6)
Between 6 months and 1 year ago:	136 (8.6)	9 (6.6)
Between 1 year and 10 years ago:	875 (55.6)	58 (6.6)
More than 10 years ago:	409 (25.9)	24 (5.8)
What type of assistance did you use (if any)?		
Unassisted:	1313 (83.4)	87(6.6)
Nicotine replacements	32 (2.0)	5(15.6)
Behavioural/psychological group therapy	57(3.6)	5(8.8)
Behavioural/psychological group therapy and pharmacological therapy	74(5)	8(10.8)
Behavioural/psychological group therapy and nicotine replacement	16(1)	1(6.3)
Assistance from other sources (civilian course,	82(5)	6 (7.3)

book etc)		
How difficult was it to stop?		
Much harder than expected:	25 (1.6)	NA
Harder than expected:	87 (5.5)	NA
Easier than expected:	463 (29.4)	NA
Much easier than expected:	325 (20.6)	NA
As expected:	674 (42.8)	NA
How many times did you try to stop?		
Once:	908(57.7)	40(4.4)
Twice:	357(22.7)	28(7.8)
3 times:	139(8.8)	19(13.7)
More than 3 times:	170(10.8)	25(14.7)