



Constraints to healthcare access among commercial fishers

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ABSTRACT

Fishing is a challenging occupation, in which physical and mental health risks may be exacerbated by environmental, socio-economic and policy change. While anecdotal information suggests that compared to other groups fishers are less likely to access healthcare, the reasons for this are poorly understood. Constraints to accessing healthcare were assessed through a mixed methods approach, using a holistic framework of access. A self-administered questionnaire was completed by 119 commercial fishers in Cornwall, UK, and complemented by qualitative focus groups with women from fishing communities. Health issues experienced and perceived constraints to healthcare access differed among fishers. Organisational factors and social norms were the most commonly perceived constraints, and stronger perception of these was associated with greater likelihood of leaving a health concern untreated in the past year. The findings suggest that proactive steps are needed to enhance supply and utilisation of available healthcare services, to ensure fishers' needs are met.

1. Introduction

Globally, commercial fishing is a physically and mentally demanding occupation. Fishing is considered the most hazardous peacetime occupation in the UK, evidenced by the high frequency of fatal accidents (Roberts, 2010). Fishers face direct exposure to physical hazards, often working with heavy machinery in an unpredictable environment (Windle et al., 2008). Beyond these immediate risks to health, fishers also experience a range of environmental changes, economic fluctuations, and changes to policy and regulations that can have implications for their health and other aspects of wellbeing (Tingley et al., 2010). These pressures are exacerbated by the self-employed nature of most fishers, who are exposed to price fluctuations in both their catch and fishing inputs (Abernethy et al., 2010; Davis, 2012). Behavioural responses to change combined with financial insecurity can lead to increased risk-taking and exposure to hazardous conditions, endangering both immediate safety (through accidents and injuries) and long-term health outcomes (for example through stress and fatigue) (Emery et al., 2014). Among fishers, poor health can therefore be seen as both a barrier to productivity and a potential indicator of social vulnerability.

Fishers have been identified as a vulnerable group by UK public health services, with high risk of poor health outcomes compared to the general population (NHS, 2014). Anecdotal evidence suggests that fishers are less likely than the average population to engage with health

services (NHS, 2014), yet effective public health interventions are hindered by limited understanding of how fishers access healthcare and what constrains access. Existing research focuses primarily on fishers' health outcomes or health issues linked to occupational factors (Lawrie et al., 2004, 2003; Matheson et al., 2001; Novalbos et al., 2008), and little work looks at fishers' access to, and engagement with, healthcare (Burke et al., 2006). Studies that do take access into account tend to only apply a partial view of access (e.g. focus on organisational constraints; Prosenewitz and Lippi, 2012), or use healthcare utilisation as a proxy for access (Dixon-Woods et al., 2006). However, utilisation statistics do not tell us how access is established or, indeed, hindered. To date, the factors that influence access are therefore poorly understood. This is a key research gap, as in order to develop effective policy interventions and outreach programmes that meet the needs of vulnerable groups such as fishers, it is vital that these constraints are identified and addressed.

This paper presents the findings of a study of health and healthcare access among fishers in Cornwall, southwest UK. Given that attention to fishers' health typically focuses on common physical conditions and risk of mortality, this study first aimed to understand the breadth of health issues experienced by fishers. Secondly, using a holistic definition of access, the study aimed to identify salient constraints to healthcare access, and specifically to test how commonly-identified constraints relate to fishers' help-seeking behaviour. Given the heterogeneity of fishing operations in the study area, we hypothesise that constraints to

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Table 1

Key characteristics of surveyed fishing communities. Data sources (Beatty et al., 2014; Lobley et al., 2011; MMO, 2017a, 2017b). The remaining nine responses were collected by mail or online.

Port	Fishers surveyed	Population (2011)	Fishing vessels		Weight landed (t) (2009)	Value landed (million £) (2009)	Most targeted species
			≤10 m	> 10 m			
Newlyn	57	4400	167	50	7121	17.2	Monkfish, sole, megrim, scallop, crab
Mevagissey	20	2300	61	9	713	1.5	Pollock, scallop, mackerel
Padstow	20	3700	22	4	474	1.4	Lobster, crab, turbot
Looe	13	4100	4	6	775	1.8	Lemon sole, monkfish, scallop, squid

access may be differentiated among the fleet, and test this hypothesis to identify key differences, enabling more specific targeting of future interventions. We conclude with a set of policy and public health recommendations for better meeting fishers' health needs.

1.1. Access to healthcare

This study applies a holistic definition of access to healthcare, which encompasses both the supply and utilisation of services. Understanding utilisation is important to identify whether potential access (e.g. free National Health Service or health insurance) is converted into realised access (Aday and Andersen, 1981). Utilisation is mediated by both supply and demand factors, which interact to influence different health outcomes among individuals (Goddard and Smith, 2001). Supply relates to the characteristics of the delivery system - in this case the healthcare system (Aday and Andersen, 1981). Factors influencing the provision and quality of health services include the availability of medical staff and facilities, relevant technologies and medication (Ensor and Cooper, 2004), and their distribution. Supply-side constraints can also be linked to the operational structure of the healthcare system, and can be manifest in prolonged waiting times, the (perceived) attitudes of medical staff, or the difficulty of obtaining admission (Ensor and Cooper, 2004). While these factors are important, they only provide limited insight into why and how people access, or are unable to access, health services.

A deeper understanding of access to healthcare can be gained by incorporating factors of demand, which relate to population characteristics - in this case, the characteristics of fishermen. While health services might be available, their uptake can be constrained by demand-side constraints such as personal circumstances, financial implications and organisational factors. For example, although healthcare is free to most users under the UK's National Health Service, there might be various personal or opportunity costs associated with accessing it, such as the loss of earnings associated with attending appointments (Ensor and Cooper, 2004), or incompatibility between the operating hours of healthcare facilities and people's working patterns (Field and Briggs, 2001). Demand may also be influenced by unequal distribution of information about service availability (Dixon-Woods et al., 2006; Goddard and Smith, 2001). For example, migrant fishers may be uncertain about their entitlement to healthcare, and often are not registered with local doctors (Frank et al., 2013; Spencer et al., 2007).

Demand-side constraints are shaped by social and cultural influences. These include people's values, norms, attitudes and preferences, and trust in the healthcare system and health professionals. Values and norms such as self-reliance and independence can result in reluctance to use formal services (Turner Goins et al., 2005), leading to delayed help-seeking and detection of medical conditions (Larkey et al., 2001). Among vulnerable populations, especially deprived groups, normalisation of symptoms and less positive conceptualisations of health can lead to lower use of preventative and higher use of emergency services (Dixon-Woods et al., 2006). Identifying the demand-side constraints that shape fishers' use of healthcare promises useful insights for developing future policy and public health outreach.

2. Methods

2.1. Case study area

Cornwall, southwest UK, is characterised by high dependence on marine fishing, with the landings of its 32 active fishing ports worth £22 million in 2015 (MMO, 2015). Newlyn, Cornwall's largest port, is the second most significant port in England by value of landings (MMO, 2015). Of the 600 vessels registered in Newlyn's administration in 2015, 88% were under 10 m in length, reflecting the dominance of smaller inshore boats (MMO, 2015). However, fishing activity is diverse, and fishers employ a variety of gears, from high-capacity bottom trawlers, through to nets, pots and hook and line. UK fishers are largely self-employed and typically follow a profit-share income system, making them vulnerable to changing availability of fish stocks, as well as to economic and policy changes (Symes and Phillipson, 2009).

This study focused on four commercial fishing ports: Newlyn, Padstow, Mevagissey and Loee. These ports were selected to give a geographic spread across the county and to capture a range of fishing activity across communities with different characteristics (Table 1). Ethical approval for the study was obtained through the University of Exeter Research Ethics Committee.

2.2. Survey of commercial fishers

A questionnaire was administered to 119 fishers between September and December 2016. Respondents were selected opportunistically at the four study ports. The questionnaire was also made available online and at local harbour masters, producer organisations and training centres. In total 110 questionnaires were administered on paper and nine collected online or by mail. The vast majority of respondents were British males, with only one female respondent, and one respondent from outside the European Economic Area (Table 2). Both skippers and crew members were represented in all ports, with fishers on average having 25 years fishing experience.

The questionnaire included questions related to fishing practices, fisher health and health-related behaviours, use of and attitudes towards healthcare, socio-economic circumstances and demographics. Based on a survey of relevant literature four key categories of constraints were identified, and a set of Likert-style questions was designed for each to explore their prevalence among fishers in Cornwall (Table 3).

Fishers were classified into groups sharing similar socio-demographic characteristics and fishing practices using multiple correspondence analysis (MCA) and clustering. MCA reduces complex sets of variables to fewer composite indicators comprising subsets of variables that are correlated with one another, but relatively independent of other variables. Missing values were imputed using an iterative algorithm (Josse et al., 2012). Each dimension was interpreted and composite scores were calculated for each respondent on each dimension. Based on these scores, fishers were classified into similar groups using partitioning around medoids, using silhouette widths of each cluster to assess cluster reliability (Kaufman and Rousseeuw, 2005; Reynolds et al., 2006).

Table 2
Characteristics of survey respondents.

Variable	Response category	Newlyn	Mevagissey	Padstow	Looe	Other	Total
Respondents		58	20	20	13	8	119
Gender	Male	57	20	20	13	6	116
	Female					1	1
	No response	1				1	2
Nationality	British	53	20	20	13	7	113
	EU/EEA	3					3
	Non-EEA	1					1
	No response	1				1	2
Role	Skipper	35	16	13	10	5	79
	Crew	17	3	6	3	1	30
	No response	6	1	1		2	10
Mean fishing experience (yrs)		25	26	21	30	27	25

Fishers’ perceptions of different sets of constraints were compared across clusters using permutational MANOVA, a non-parametric test analogous to a multivariate analysis of variance (Oksanen et al., 2009). A pseudo-F statistic is calculated using permutation procedures (999 permutations) to obtain p-values for each term in the model.

The link between perceived constraints and healthcare utilisation was analysed using responses to a question asking: “Over the past 12 months, have you had any health concerns that you haven’t sought treatment or advice for?”. Our analysis is based on the assumption that leaving a health concern untreated implies the existence of one or more constraints to accessing healthcare. For the 10 most commonly perceived constraints, Kruskal Wallis tests were used to identify whether respondents who responded positively to this question perceived each constraint more or less strongly than those who responded negatively (based on scores on 1–5 ordinal scale for each constraint).

All statistical analyses were undertaken in R (R Core Team, 2017) using the FactoMineR, missMDA, cluster and vegan packages.

2.3. Focus groups with women in fisheries

Questionnaire data were supplemented by qualitative focus groups held with women from fishing families, recognising the important role of women in promoting wellbeing in fishing communities (Britton, 2012; Kilpatrick et al., 2015). Women’s views on health and healthcare informed interpretation of data collected from fishers and helped identify limitations of the survey.

Two focus groups were held in Newlyn and Mevagissey, with 12 and 10 attendees respectively, and lasted 2 h each. Participants were recruited through a snowballing approach via key community contacts. Participants were asked to discuss their experience of fishers’ health and access to healthcare, their own health in relation to changes in fishing communities, and their role in promoting health. Discussions were recorded with permission and subsequently transcribed. Transcripts were coded using NVivo 11 (Bazeley and Jackson, 2013) to identify themes relating to the health and wellbeing of fishing families, as well as the challenges constraining fishers’ access to healthcare.

Table 3

Likert-style statements capturing perceptions of constraints to healthcare. Responses were recorded on a scale of 1–5 where 1 = strongly disagree and 5 = strongly agree.

Category	Statement	References
Organisational, physical and financial	It is too far to travel to a GP	Estrada et al. 1990; Grimsmo-Powney et al., 2009; Kim et al., 2010; Turner Goins et al., 2005
	Transport links are poor, making it difficult/time consuming to go to the doctor	
	I struggle to afford the cost of prescriptions	
	I struggle to afford the cost of check-ups and/or treatment	
	I can't afford to take time off to attend appointments	
	I struggle to afford the cost of transport needed to get to appointments	
	The timing of appointments is usually inconvenient and clashes with work	
	There is usually a long waiting time for appointments	
	I tend to keep my feelings and worries to myself	
	I find talking about my body and health issues embarrassing	
Social and cultural norms	I don't like asking for help	Gould et al., 2010; Hoge et al., 2004; Mahalik et al., 2007
	Any health problems I have seem small compared to the risks I face at sea	
	I can look after myself without help from anyone else	
	I don't want to be seen as weak	
	Doctor surgeries are places for women	
	I tend to keep my feelings and worries to myself	
Personal concerns	I am worried that the doctor could discover a serious health problem	Fitzpatrick et al., 2004; Lubega et al., 2015; Rose et al., 2004
	I am worried that I may need further time off work	
	I'm worried that I will have to make changes to my life	
	I don't want to let other crew down by taking time off work	
Perceptions of healthcare services	I'm worried that I won't be able to go to sea any more	Rose et al., 2004; Safran et al., 1998
	The healthcare system is more concerned about saving money than doing what is needed for my health	
	I receive high quality medical care from the healthcare system	
	My doctor cares about my health as much as I do	
	My doctor's explanations are often unclear and I feel left in the dark	

3. Results

3.1. Fisher characteristics

MCA identified two dimensions that together explained 29.6% of the variation in fisher characteristics (Supplementary Data). The first dimension (19.4% of variance) represented a split between large vessels (> 24 m) with multiple crew members, and small (< 7 m) vessels where fishers often operate single-handedly. The second dimension (10.2% of variance) separated large (> 24 m) and small (< 7 m) vessels from medium sized vessels (7–15 m and 15–24 m).

Clustering resulted in four distinct groups of fishers (Supplementary Data). Group 1 contained full-time fishers (61% crew members) on large vessels (≥ 15 m), with fishing trips typically lasting three or more days. These vessels operated with three or more crew members and were primarily beam trawlers (58%). The majority (79%) of fishers worked > 10 months per year and 96% had no other employment.

Groups 2 and 3 comprised primarily mid-sized vessels (7–15 m) working full-time and year-round. Group 2 vessels typically operated with 1–4 crew members, and worked mainly bottom trawl, nets or ring nets. Forty percent of respondents in Group 2 were aged 16–30. In contrast, vessels in group 3 typically worked single-handed or with only 1–2 crew, and almost all respondents were skippers (97%), with 73% aged over 40. These vessels commonly used nets, hook and line, and pots, and undertook trips of under 3 days. Twenty percent of respondents in group 3 had another source of employment in addition to fishing.

Finally, group 4 represented older fishermen (73% over 50) predominantly working hook and line and/or pots single-handedly from small boats (74% < 7 m). Only 39% of this group considered themselves full-time fishers, with 68% having other employment.

3.2. Reported health outcomes and personal practices

Twenty-nine percent of fishers had been absent from work due to ill health in the past year, ranging from 20% in group 1 to 40% in group 3. The majority of fishers (78%) reported being in good or very good general health, with 6% reporting poor or very poor health. Focus group discussions indicated some acceptance of poor health: “[since] he was 17 he always told me that by the time he was 40 his body would be knackered, because that was the expectation”, and, “I think they think that is the norm, rather than it not being the norm” (Mevagissey).

Forty-three percent of fishers reported no diagnosed conditions. Commonly diagnosed conditions among the remainder included those relating to cardiovascular (e.g. blood pressure, cholesterol), respiratory (chest infections, asthma), and mental health (depression or anxiety) (Fig. 1a). Commonly reported symptoms in the past year included musculoskeletal problems (back pain and joint problems), lack of sleep and associated fatigue, and stress (Fig. 1b).

Cardiovascular-related conditions and mental health issues both varied among groups ($\chi^2 = 11.81$, $df = 3$, $p = 0.009$; $\chi^2 = 9.60$, $df = 3$, $p = 0.032$ respectively). Cardiovascular-related conditions were highest among group 4, while reported stress, anxiety and depression were most prevalent in group 1 (Fig. 1c). Focus group participants in Newlyn linked cardio-vascular conditions to stress and described fishermen as a “walking heart attack” because of their diet, caffeine intake and self-medication with over-the-counter painkillers.

Personal practices indicating fishers' propensity to look after their own health varied among groups (pseudo $F_{(1)} = 6.686$, $R_{adj}^2 = 0.056$, $p = 0.001$) (Table 4). In particular, the frequency of smoking was highest in group 1, while safety precautions at sea such as life jackets and sunscreen were most commonly employed by group 4. Recommended guidance for fruit and vegetable consumption and exercise was followed by approximately a third and half of fishers respectively. The majority in all groups reported never or rarely exceeding alcohol consumption of > 2 alcoholic drinks per day. Women suggested that

expectations of ill-health influenced fishers' behaviours: “it sort of becomes a self-fulfilling prophecy, almost, that that's what they're expecting it to be [...] it doesn't encourage them to take care of themselves” (Mevagissey).

3.3. Constraints to healthcare access

3.3.1. Physical, financial and organisational

The most commonly perceived constraints to healthcare were organisational, with 68% of fishers agreeing or strongly agreeing that the timing of appointments was inconvenient (Fig. 2a). This issue was also raised in focus groups: “Making appointments [is difficult]. You never know if they're in or not. They don't know if they're in or not” (Newlyn). The inability to attend appointments can also hinder access to NHS dental care: “I've had to cancel loads of dentist appointments. [He] got struck off for missing two, I think” (Mevagissey).

Long waiting times for appointments were perceived as a barrier by 51%. Though the cost of treatment or transport were not commonly perceived as constraints, opportunity costs presented a financial barrier, with 44% of fishers agreeing that they could not afford to take time off to attend appointments. Focus group participants described how such concerns led to self-medication: “If you don't work, you don't have pay, so you start the painkiller run.” (Newlyn). Physical constraints, such as distance, were not commonly perceived. These physical, financial and organisational constraints differed among groups (pseudo $F_{(1)} = 7.316$, $adj. R^2 = 0.065$, $Pr > F = 0.002$), with commonly perceived constraints most prevalent among groups 1 and 2.

3.3.2. Social and cultural norms

Constraints relating to social and cultural norms were consistently perceived by fishers across the four groups (pseudo $F_{(1)} = 1.092$, $adj. R^2 = 0.010$, $Pr > F = 0$). Respondents exhibited a strong preference for keeping their feelings and worries private (66%), possibly to avoid being seen as weak (31%) (Fig. 2b). Fifty-five percent stated that they do not like asking for help and 38% stated that they can look after themselves without help from others. Fishers' partners also alluded to the influence of social norms: “if they have time off work, it's clearly visible to other people around. If the boat's not at sea, people want to know why [...] and they are very proud and stubborn and competitive” (Mevagissey).

Furthermore, women's narratives about their partners' attitudes towards health and help-seeking revealed accounts of normalised practices among fishers, including hiding their ailments, working through illness, and not seeking professional help:

“... it's like the constant ‘I'm okay, I'm fine, there's nothing wrong with me’, when you can clearly see that there is really something wrong with him.” (Mevagissey)

“They take it to the next level before they ever look for help ... so when they do need help, they are at a higher level than most normal humans.” (Newlyn).

3.3.3. Personal concerns

Fishers were concerned about the long-term implications of accessing healthcare, including being unable to go to sea (53%) and having to make changes to their life (38%), while 44% worried about having to take time off work in the short-term (Fig. 2c). Women discussed how these concerns influenced fishers' behaviour:

“In the last year my husband's been admitted to hospital twice under emergency conditions and both times he's just been ramping to get out of the door again, when he should have been staying.” (Mevagissey)

“Our bills need paying. The only way that pays it is being out there. Their health will never change because they're too busy to look after themselves.” (Mevagissey).

Fishers were also concerned about implications for others, with 47%

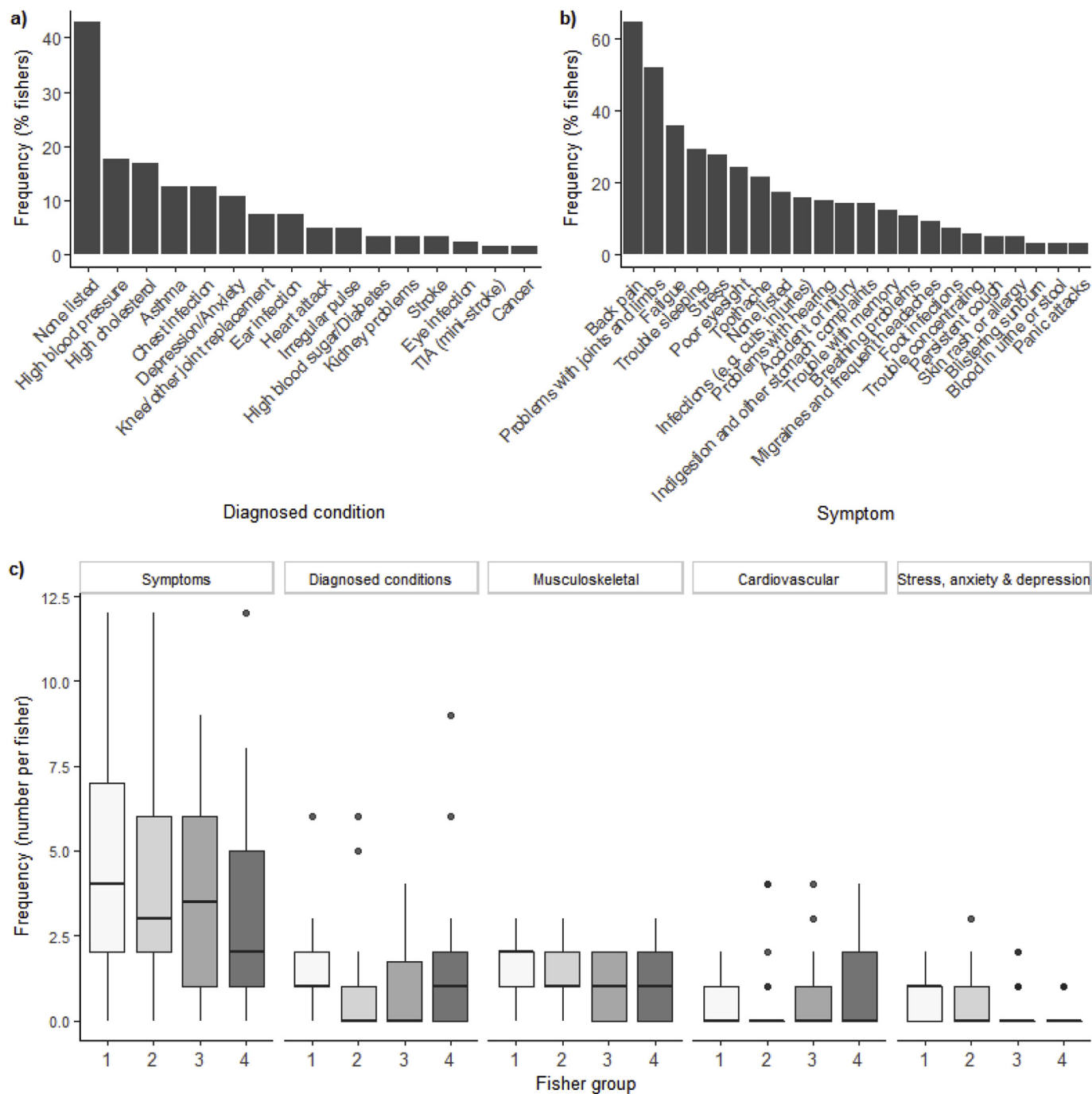


Fig. 1. Frequency of health issues reported by fishers (n = 119): a) diagnosed illnesses, b) symptoms reported in the past 12 month, and c) differences among fisher groups.

concerned about letting down fellow crew if they took time off work for health reasons. As focus group participants explained, being a skipper is a “huge responsibility, because you’re responsible for your own family, [and] you’re responsible for other people’s families” (Mevagissey). A smaller proportion (18%) were concerned about healthcare professionals detecting a serious problem. Perceptions of this set of constraints differed among groups (pseudo $F_{(1)} = 3.080$, adj. $R^2 = 0.027$, $Pr > F = 0.049$), with concerns about taking time off and letting down crew more common among groups 1 and 2, in which vessels typically had higher numbers of crew.

3.3.4. Perceptions of the healthcare system

The majority of respondents positively evaluated the care they

received from their doctor (50%) and the healthcare system as a whole (51%) (Fig. 2d). However, a third of fishers (35%) felt that saving money took priority over care (Fig. 2d). Trust in and perceptions of the healthcare system were reported consistently across the four groups (pseudo $F_{(1)} = 0.223$, adj. $R^2 = 0.002$, $Pr > F = 0.809$). Focus group data suggested that a lack of understanding of fishers’ circumstances can compromise trust and the uptake of available services: “And because they’re not local doctors, as in they’ve not grown up down here, they don’t understand ... If a doctor’s grown up in the area, they will understand what’s happened to those bodies” (Mevagissey).

Table 4
Fishers' personal practices related to health. Responses were recorded on a scale of 1–5 where 1 = never and 5 = always. Table shows proportion of fishers indicating positive responses (always or often) by group (G1-4).

Personal practice	% fishers responding always or often				
	G1	G2	G3	G4	Overall
I consume more than 2 alcoholic drinks per day	9	17	17	14	15
I eat five portions of fruit or vegetables every day	35	38	40	27	36
I exercise for at least 30 min 5 days a week	39	55	57	71	55
I smoke or chew tobacco and or tobacco products	64	38	13	29	35
I wear my lifejacket when I'm out at sea	26	17	30	41	26
I wear sunscreen when I'm outside for long periods of time	13	14	13	41	19

3.4. Utilisation of healthcare

Though a majority of fishers had seen a general practitioner doctor or dentist (60% and 58% respectively) in the past year, 27% reported that over the same time period they had experienced a health concern for which they had not sought advice or treatment. Leaving a health issue untreated was associated with higher scores reported for nine of the ten most widely perceived constraints (Fig. 3a–c). This finding suggests that stronger perception of constraints may indicate lower utilisation of healthcare services. The only exception was the question “Any health problems I have seem small compared to the risks I face at sea”, which was unrelated to whether or not fishers had left an issue untreated (Fig. 3b).

4. Discussion

Although an existing body of research highlights the health issues affecting fishers (Woodhead et al., 2018), challenges in accessing healthcare remain poorly understood. Drawing on a mixed methods

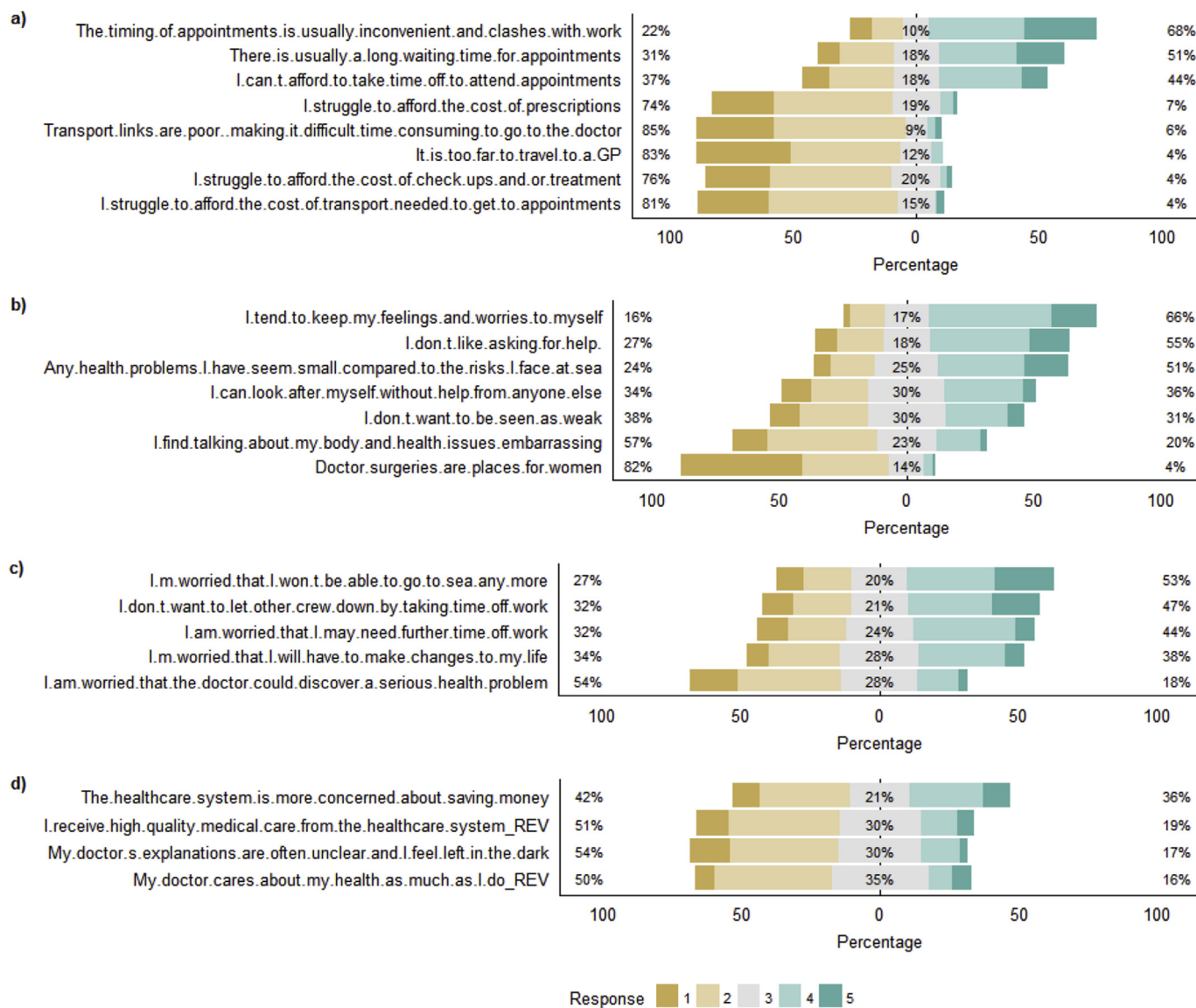


Fig. 2. Perceptions of constraints among fishers, showing constraints relating to a) physical, financial and organisational factors, b) social and cultural norms, c) personal concerns, and d) perceptions of the healthcare system. Shading represents the proportion of respondents choosing each score on a 5-point ordinal scale (1 = strongly disagree, 5 = strongly agree). Scores for positively-worded statements with the suffix ‘REV’ have been reversed so that higher scores reflect stronger perception of constraints.

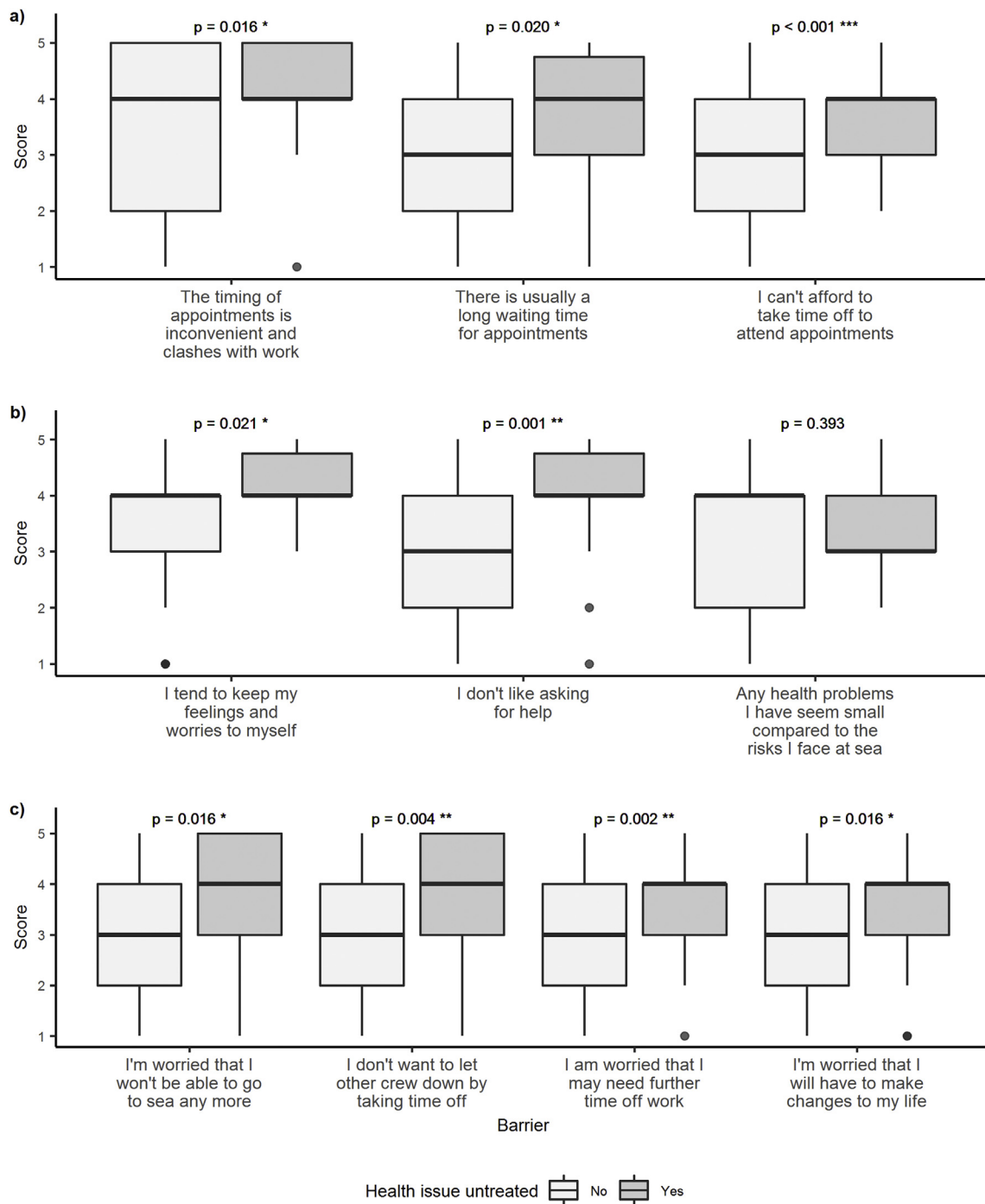


Fig. 3. Scores for ten most commonly perceived constraints to healthcare access, in relation to whether or not fishers had left a health issue untreated in the past year: a) organisational constraints, b) social and cultural norms, and c) personal concerns.

approach to identify issues around both availability and utilisation of healthcare services, this study provides an insight into these constraints. The findings highlight the particular importance of organisational constraints and social norms in influencing fishers' access to healthcare.

4.1. Fishers' health

Positive reports of general health and a large proportion of fishers reporting no diagnosed conditions initially appear at odds with the assertion that fishers are vulnerable to poor health outcomes. There are several possible reasons for this apparent contradiction. First, reports of

good health among fishers have been found to coincide with high levels of reported pain (King, 2017), suggesting some normalisation of ill health. Such disparities may be driven by norms that view the ability to endure pain or illness as demonstrating masculinity (O'Brien et al., 2005). Second, few diagnoses may reflect either good health or a lack of utilisation of healthcare services through which diagnoses would be made. Third, a limitation of the study is that the sample may reflect a 'healthy worker effect', whereby active workers display better health outcomes than the wider population (Eisen et al., 2013). In other words, the study did not capture individuals who had temporarily or permanently exited the fishery due to ill health. Focus group discussions highlighting fishers' expectations that ill health will eventually

restrict ability to work suggest that further research to capture this population would be informative.

Despite these caveats, the findings offer an insight into commonly reported health concerns among active fishers. The high incidence of musculoskeletal problems reported is consistent with literature on fishers' health (e.g. [Kaerlev et al., 2008](#)). In contrast, the incidence of health issues such as lack of sleep, fatigue and stress has been less widely reported ([å Høvdanum et al., 2014](#)). Sleep and rest are important in underpinning general long-term health, and in reducing the risk of accidents and injuries ([Frantzeskou et al., 2012](#); [Levin et al., 2016](#)). Stress is an important symptom, as cumulative and chronic stressors have been linked to poor physical and mental health outcomes ([Thoits, 2010](#)).

4.2. Healthcare supply

Some of the perceived constraints to healthcare access relate to supply-side issues of healthcare provision, and have implications for the design of healthcare services in fishing communities. First, the prominence of organisational constraints highlights the incompatibilities of working patterns in fishing with available healthcare services. Issues raised in focus groups about loss of 'port doctors' who understood working patterns of fishermen added an additional concern not captured by the survey. While securing GP appointments and long waiting times are problems reported nationally ([Zhou et al., 2015](#)), the unpredictability of fishers' working hours exacerbates this challenge. Supply-side interventions that provide flexible service provision could help support fishers. Recent initiatives in Cornwall have included quayside health and dental checks, which offer services at times convenient to fishers, in familiar spaces, and by individuals or organisations familiar with the demands of fishing ([NHS, 2014](#)).

Second, the findings highlight the heterogeneity of fishers, particularly in relation to organisational constraints. Groups who most strongly experienced organisational constraints were also among those who reported poorer health outcomes and were more likely to engage in high risk behaviours such as smoking and not wearing life jackets at sea. A targeted approach to service provision is needed to address the diversity of health needs among fishers. For instance, quayside health checks, which assess risk of cardiovascular disease, have focused on fishers aged 40–74. Yet, the findings suggest that similar initiatives may be useful for younger fishers such as those in group 1, who displayed increased levels of cardiovascular risk factors such as high smoking rate (64%, compared to 15.7% for the general population in Cornwall ([Public Health England, 2017](#))), and who reported higher levels of musculoskeletal symptoms, fatigue and stress.

4.3. Healthcare utilisation

Traits commonly associated with masculinity such as independence, fatalism, and braving tests of endurance have been associated with fishers in a range of contexts ([Pollnac and Poggie, 2008](#)). Though there is speculation about the degree to which fishers adopt such norms, to our knowledge this study is the first to quantitatively explore relationships between fishers' attitudes and health-seeking behaviour.

Reported reluctance to share health concerns and seek assistance is consistent with literature suggesting that men (particularly in male-dominated occupations) may be more averse to seeking help than other groups ([Gould et al., 2010](#)). Widely perceived norms around masculinity include those portraying men as independent, self-reliant, and strong ([Courtenay, 2000](#); [O'Brien et al., 2005](#)), and the adoption of such norms has been seen to influence men's health behaviours ([Mahalik et al., 2007](#)). Focus group findings are also consistent with evidence that men may postpone seeking help until pain impedes daily activity, and high elasticity in what is considered a 'trivial' health problem ([O'Brien et al., 2005](#)). However, while there is a hegemonic view of masculinity that depicts men as unconcerned about health, [Gough](#)

(2006) cautions against stereotypes in identifying how masculinity can help transform help-seeking behaviours.

The common perception that health concerns seem minor in comparison to risks faced at sea highlights the inherent dangers of fishing as an occupation. Research suggests that fishers are more likely to take risks than other occupational groups ([Davis, 2012](#)). Risk-taking in fishing behaviours may also extend to other areas of life and influence healthcare utilisation ([Seeley and Allison, 2005](#)). However, this study's findings suggest that downplaying health risks was not related to fishers' propensity to leave a health concern untreated. One explanation for this finding is that attitudes to risk may be more likely to influence behaviours that put health at risk, rather than subsequent access to healthcare. The findings offer some evidence of differences in risk-taking among groups. For instance, behaviours such as smoking and not wearing life jackets may indicate a tendency to disregard risk, and are consistent with research showing that fishers often downplay the importance of occupational health and safety ([Petursdottir et al., 2001](#)). Further work would be useful to investigate how attitudes to risk influence decisions and behaviours around health.

4.4. Generalisability

The focus of this study on Cornwall and a non-random sampling approach mean that the findings are not necessarily generalisable to a wider population. In particular, while the socio-economic and demographic characteristics of the sample reasonably represent the fleet in England ([Seafish, 2016](#)), the workforce composition in other areas of the UK is quite different. For example, a considerable proportion of UK fishers originate from the European Economic Area (EEA) (8.1%) and from non-European countries (19.3%), particularly in Scotland and Northern Ireland ([Seafish, 2016](#)). Non-EEA crew members who are not 'ordinarily resident' in the UK may face additional challenges, including being denied access to free NHS services ([Jayaweera, 2010](#)). Despite this caveat, because data on fishers' health in the UK are not systematically collected, these new insights into fishers' behaviours and attitudes have implications for a range of actors, including healthcare providers and policy-makers, fisheries managers, and fishing communities themselves.

5. Conclusions and policy implications

This study set out to examine the health issues faced by commercial fishers in Cornwall, and to identify the constraints that influence fishers' access to healthcare. The findings highlight the particular importance of organisational constraints and personal concerns, which differed among fishers, and constraints related to social and cultural norms, which applied widely across the sample of fishers. These findings underscore the need for a holistic concept of access to understand demand-side as well as supply-side constraints, and can inform future policy and practice in two key ways.

First, the findings have important implications for healthcare providers in delivering services to fishers. These include the need for supply-side interventions that provide more flexible service provision compatible with the working practices of fishers, and targeted approaches to service provision that recognise the heterogeneity of commercial fishers and their health needs. While such initiatives are emerging in a UK context (for example, provision of tailored physiotherapy services, quayside health checks and lifestyle support), the range of symptoms experienced by fishers highlights the need for additional health promotion services that target common risk factors (e.g. smoking cessation), mental health, stress and fatigue, as well as common physical health problems (e.g. manual handling) across a wider range of fishers. Lessons could be learnt from previous public health initiatives that have sought to address health inequalities in UK farming communities by improving awareness about preventative measures and access to healthcare ([Burnett and Mort, 2001](#); [Syson-](#)

Nibbs, 2001).

Second, reducing demand-side barriers to healthcare access requires interventions to address attitudes and norms that may lead to reluctance to seek help. In other resource dependent communities such as farming, industry bodies play an important role in providing 'soft entry points' to health services, bridging the gap between farmers and healthcare providers by integrating health advice and resources with wider industry information (Kilpatrick et al., 2015). The development of new initiatives targeting fishers may be informed by activities seeking to address health issues in other male-dominated industries such as seafaring and construction (Gullestrup et al., 2011; ITF Seafarers' Trust, 2017). The input of family members, and particularly women, is also widely recognised in convincing men to seek healthcare (Kilpatrick et al., 2015; O'Brien et al., 2005). This was confirmed by the focus group findings, which illustrated that women often encourage men to access healthcare and play an important role in making practical arrangements such as booking appointments. In general, emotional support and active coping assistance from social networks are important factors in reducing the effects of stressors on individual well-being, and there is a need to identify and share best practices (Thoits, 2010). However, placing emphasis on family members can create increased burden for women who themselves often shoulder stress related to fishing (Kilpatrick et al., 2015), and may unintentionally reinforce the message that men should not be concerned about their health (O'Brien et al., 2005).

Although fishers share similarities with other male-dominated occupations, this study also highlights specific needs and challenges in relation to accessing healthcare. These require solutions from healthcare providers that address both supply- and demand-side access constraints. The design of interventions targeting fishers will need to consider the unique needs, circumstances and heterogeneous characteristics of fishers through a holistic understanding of access.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2018.09.026>.

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