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Factors affecting cost and patient choice of travel insurance in cardiac disease: a web-based case-control study

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Abstract

Background: The aim of this study was to explore variations in cost and choice of travel insurance in patients with cardiac disease.

Methods: Clinical data from patients with myocardial infarction (MI, n = 20), Marfan syndrome (MFS, n = 10) and dilated cardiomyopathy (DCM, n = 10) were input to insurance websites for a proposed ten-day holiday and data for premium cost (£) and choice of quotes (n) collated for each condition. Age-matched healthy individuals were used as controls.

Results: Median cost of insurance was significantly higher for MI (£233.07; interquartile range (IQR) = £222.95–£245.47 versus £24.29; IQR = £11.9–£34.09, p = <0.001), MFS (£37.43; IQR = £23.61–58.83 versus £19.20; IQR = £9.09–£27.31, p = 0.0378)) and DCM (£166.87; IQR = £129.71–£198.62 versus £23.96; IQR = £11.99–£32.44, p = <0.001) compared to controls. Choice of quotes was also significantly reduced for MI (5; IQR = 5–14 versus 89; IQR = 26–110, p = <0.001) MFS (61; IQR = 26–83 versus 105; 26–105, p = <0.001) and DCM (19; IQR = 16–28 versus 89; IQR = 26–106, p = <0.001) compared to controls. Modifiable factors, such as time after cardiac event or awaiting further investigations, and clinical factors, such as persistent symptoms and disease severity, lead to a significant increase in cost.

Conclusions: This study provides insight into the factors affecting cost and choice of travel insurance for patients with cardiac disease. The findings highlight ways in which healthcare professionals can support patients to obtain travel insurance.

Keywords: cardiology, health insurance, health economics, travel insurance

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Introduction

Travelling abroad is common for many people living in the UK, with 45 million holiday trips taken in 2016.[1] Cheaper flights and greater choice has made flying more accessible with greater expectations to travel across all social strata.[2] These benefits should be available to those with medical conditions who should be supported in being able to choose affordable travel insurance.

Individuals with cardiac conditions face a number of barriers to travel as a direct result of their disease. Guidance created by the British Cardiovascular Society to assess an individual's fitness to fly[3] aids cardiologists in assessing a person's suitability to fly; for example, the need for available on-board aircraft oxygen therapy in those with New York Heart Association (NYHA) functional class IV heart failure. In addition, people with cardiac conditions can find it difficult to obtain appropriate travel insurance, due to cost.[4] Travel insurance is recommended for all individuals who travel and reduced access for cardiac patients can be a barrier to their ability to travel.

The European Society of Cardiology recommends that healthcare professionals should provide patients with information about travel insurance[5] to aid travel, but with a distinct paucity of research into how cardiac conditions affect travel insurance, this task is dependent on common sense advice. Pickup et al. surveyed a group of patients with adult congenital heart disease and found that 83% felt that travel insurance had not been fully discussed in clinic,[6] suggesting there is a need to provide more information.

This study explored the influence of three cardiac conditions on cost and choice of travel insurance quotes. The broader aim of this study was to gather information about travel insurance for cardiac patients in order to support patient-centred care with regard to travelling abroad.

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Methods

Selection of insurance companies

Travel insurance companies were initially identified from a list of sympathetic travel insurance companies previously published by the British Heart Foundation (BHF)[7] and a list recommended by NHS Choices for patients travelling with a cardiac condition.[8] Of these 21 insurance companies, seven required a lengthy telephone consultation and due to time constraints were excluded from our study. Two popular insurance comparison websites, GoCompare and MoneySupermarket, were included, giving a total of 16 sources for our analysis (see Appendix A). Each travel insurance website was analysed to ascertain the information required to complete a quote. Initial trial runs were completed to test whether fully anonymised patient data had any impact upon insurance premiums.

If patients had co-morbid medical conditions, then necessary information to complete the travel insurance application was collected and input.

Standardising the level of cover was important to ensure that the quotes from different insurance companies were comparable. To achieve this, a standard minimum dataset was constructed to represent a typical adult travelling to Spain for a ten-day holiday (vacation).[10] The proposed travel included no extra cover (e.g. cruises, expensive digital equipment), no maximum excess, cancellation cover >£500, medical cover >£1 million and baggage cover >£500. The impact of timing of travel on cost and choice following an acute hospitalised event was assessed for each condition.

Patient data

Fully anonymised data sets of 40 patients from local electronic health records were identified with three different cardiac diagnoses: myocardial infarction (MI, n = 20), Marfan syndrome (MFS< n = 10) and dilated cardiomyopathy (DCM, n = 10). MI patients were identified at time of discharge from a cardiology ward and MFS and DCM patients were randomly selected from a cardiology outpatient clinic (see Appendix C for patient demographics and condition details). A nominal set of age-matched case controls were created using the patients used for the primary study, minus all their medical conditions.

Costs and choice of quotes

Data on the cost of travel insurance premiums and the number/choice of insurance quotes (as a measure of choice) were collected and collated for each cardiac condition and compared with data obtained for case controls for each condition. Due to wide variation in cost and availability of travel insurance, especially in the patient group, the median was used as it is more resistant to outlier values. A Welch's unequal variances t-test was used to assess the significance of change in cost and in availability for the patients and the controls.

Clinical factors affecting cost and choice of quotes

To establish which individual clinical factors influence travel insurance cost and choice within MI, MFS and DCM, a data set for a single patient with each condition (see patients 1, 21 and 31 respectively in Appendix C) was used and specific factors changed in a systematic way to assess their impact. This was completed on the insurance comparison websites only (see Appendix A). The fold change was determined by calculating the relative increase in cost or decrease in availability for the patient compared with the control for each insurance comparison website. A median and interquartile range were taken from these values (see Table 1). A Welch's unequal variances t-test was used to assess the significance of changing the individual factors.

Ethical approval

All data were anonymised from the time of extraction and no formal ethical approval was required. The local data protection officer was consulted and agreed that the data extraction required only audit-level permissions from the local Quality Improvement Team.

Results

In total, over 1600 travel insurance quotes were obtained from 16 travel insurance companies and comparison websites.

Median cost of insurance premiums

All three conditions were associated with significantly increased cost of travel insurance premiums. The time of year and the time period between booking and the travel date had no significant impact on cost or quote choice. The median cost of each insurance website for MI, MFS and DCM patients compared with controls are demonstrated in Figures 1a, 1b and 1c respectively.

MI patients had a significantly higher median insurance cost across all travel insurance websites for trips occurring within three months of the MI compared to the control group (Median cost; IQR; Range, p value) (£233.07; IQR = £222.95–£245.47; £162.56–£281.48 versus £24.29; IQR = £11.99–£34.09; £5.29–£42.61, p = <0.001).

Similarly, patients with MFS had a higher median insurance cost across all travel insurance websites compared to controls (£37.43; IQR = £23.61–£58.83; £14.47–£71.03 versus £19.20; IQR = £9.09–£27.31; £5.29–£42.61, p = 0.0378).

These trends in median cost were seen in patients with DCM across all travel insurance websites (£166.87; IQR = £129.71–£198.62; £105.42–£236.85 versus £23.96; IQR = £11.99–£32.44; £6.30–£42.61, p = <0.001).

Choice of insurance quotes

Choice was significantly constrained as demonstrated by the reduced number of available travel insurance quotes associated with each condition (Figure 2). Only eight of the 16 travel insurance websites offered online travel insurance quotes to MI patients. The eight companies which didn't offer a quote either would not offer insurance or required a telephone consultation – typically because they required the results of investigations or the outcome of a non-routine outpatient appointment. Of the five comparison websites,

Figure 1 Cost of travel insurance (£)
Cost of travel insurance (£, median; IQR and range) for each condition and appropriate age-matched controls by travel insurance company/website.

Figure 1A Myocardial infarction

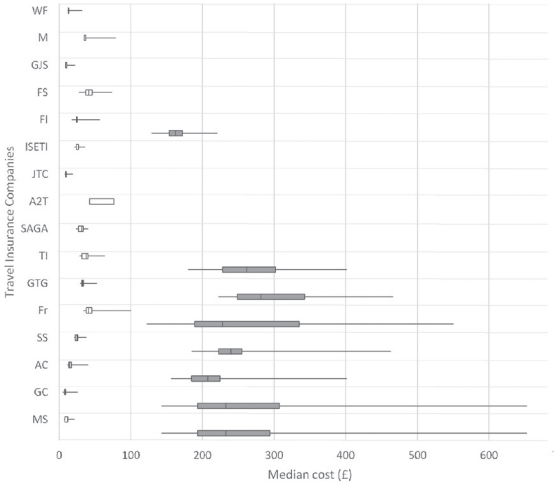


Figure 1B Marfan syndrome

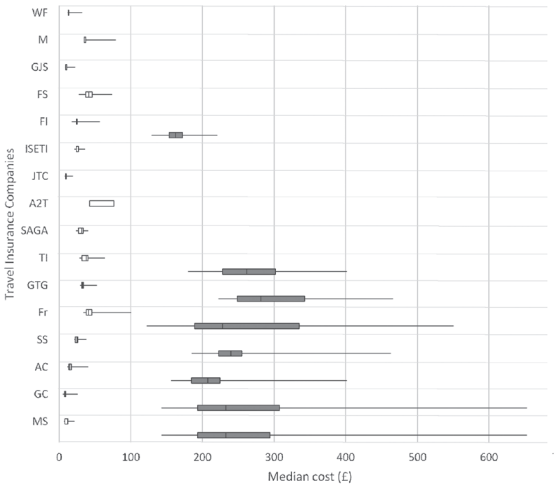
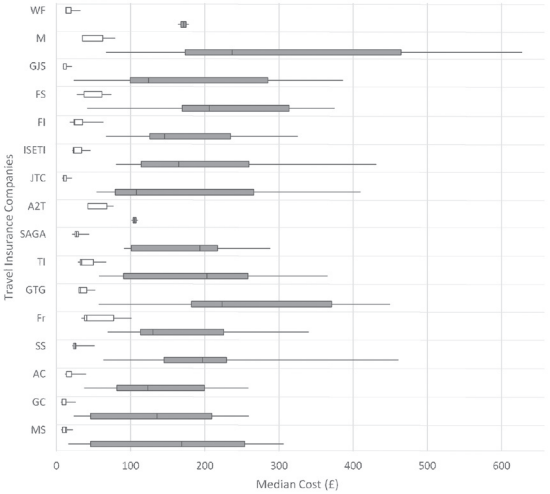


Figure 1C Dilated cardiomyopathy



A2T: Able2Travel; AC: AllClear; FC: Flexicover; FS: Free Spirit; FD: Freedom; GJS: G.J. Sladdin; GC: GoCompare; GTG: Goodtogoinsurance; ISETI: It's so easy travel insurance; JTC: JustTravelCover; MaKS: Makesure; MonS: MoneySupermarket; SA: SAGA; SS: Staysure; TI: Travel insured; WFI: WorldFirst.

Figure 2 Choice of insurance quotes
Number/choice of quotes (n, median; IQR and range) for each cardiac condition and age-matched controls for comparison insurance websites/companies.

Figure 2A Myocardial infarction

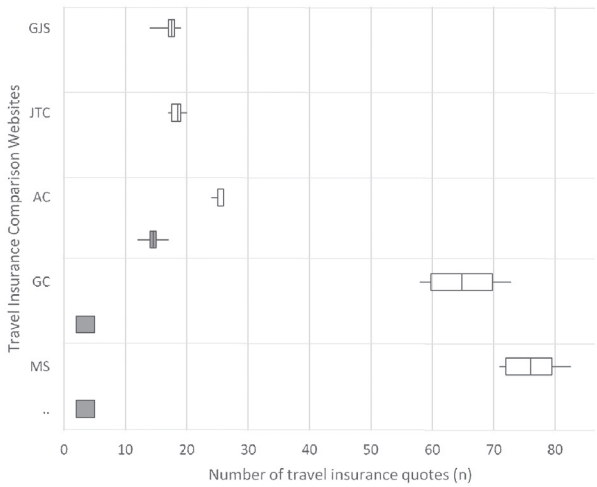


Figure 2B Marfan syndrome

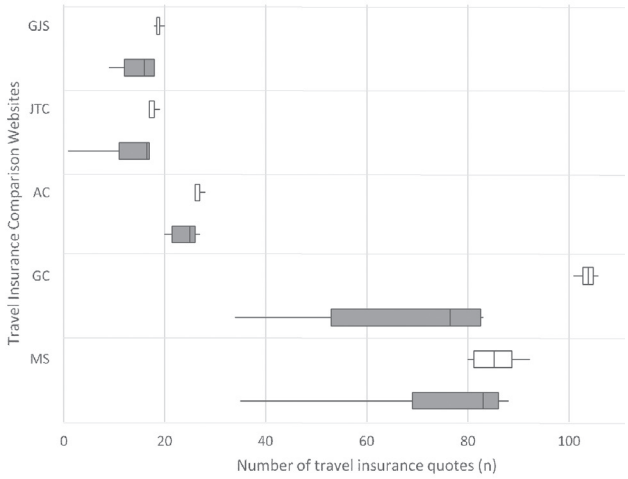
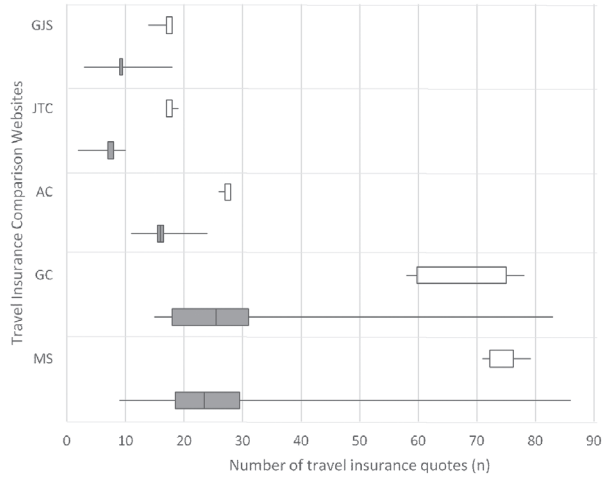


Figure 2C Dilated cardiomyopathy



AC: AllClear; GJS: G.J. Sladdin; GC: GoCompare; JTC: JustTravelCover; MonS: MoneySupermarket.

JustTravelCover and G.J.Sladdin did not offer cover for MI patients. The difference in choice of quotes (n) for MI patients compared with controls (median number of quotes; IQR; range, p value) were significantly reduced on MoneySupermarket (5; IQR = 2–5; 2–5 versus 113.50; IQR = 110–117; 71–120, p = <0.001), GoCompare (5; IQR = 2–5; 2–5 versus 94; IQR = 89–99; 58–102, p = <0.001) and AllClear (14; IQR = 14–14; 12–16 versus 26; IQR = 25–26; 24–26, p = <0.001) compared with the control patients respectively.

For MFS, all travel insurance websites offered cover except SAGA as this company only offers insurance to people >50 years old and the sample of MFS patients were all younger. MFS was associated with a significant reduction in choice of quotes compared to respective controls on MoneySupermarket (83; IQR = 69-86; 35–88 versus 110; IQR = 95–113.5; 80–117, p = 0.004), GoCompare (76.5; IQR = 53–82.5; 34–83 versus 105; IQR = 104–106; 101–107, p = <0.001), AllClear (25; IQR = 21.5–26; 20–27 versus 26; IQR = 25–26; 25–27, p = 0.032), JustTravelCover (16.5; IQR = 11–17; 1–17 versus 17; IQR = 16–17; 16–18, p = 0.024) and G.J.Sladdin (16; IQR = 12–18; 9–18 versus 17; IQR = 16.5–17; 16–18 p = 0.042).

All travel insurance websites offered quotes to patients with DCM; however, World First and AbleToTravel only offered online quotes to two of ten patients. JustTravelCover required a telephone consultation for three patients who had a history of mental health problems. DCM was associated with a significantly reduced choice on MoneySupermarket (23.50; IQR = 18.5–29.5; 9–86 versus 117; IQR = 102.5–117; 71–120, p = <0.001), GoCompare (25.50; 18–31; 15–83 versus 99; IQR = 83.75–99; 58–102, p = <0.001), AllClear (16; IQR = 15.5–16.5; 11–24 versus 26; IQR = 25–26; 24–26 p = <0.001), JustTravelCover(8; IQR = 7–8; 2–10 versus 17; IQR = 16–17; 16–18, p = <0.001) and G.J.Sladdin (9; IQR = 9–9.5; 3–18 versus 18; IQR = 17–18; 14–18, p = <0.001) compared to controls respectively.

How do individual factors affect the cost and choice of travel insurance?

Individual clinical and demographic factors which changed the cost or choice of travel insurance on the 'comparison websites' were assessed for all three conditions using one exemplar patient and inputting different variables (Tables 1 and 2).

Poorly controlled and more severe symptoms had a significant effect on the cost of travel insurance. Angina (p = 0.001) and shortness of breath when walking 200 m (p = <0.001) were both associated with considerable increases in the cost of travel insurance for patients who had an MI. With MFS, the presence of an arrhythmia (p = 0.008) and orthopnoea (p = 0.001) led to an increased premium cost. In DCM, increasing numbers of admissions to hospital (p = <0.001) as well as orthopnoea (p = 0.008) were associated with a higher cost. Patients with a higher NYHA classification showed the greatest increase in cost (p = 0.016). The absence of left ventricular systolic dysfunction (p = 0.021) and arrhythmia (p = 0.030) led to lower costs.

Recent acute medical events, recent interventions, being on a waiting list for investigation or intervention were each associated with increased premium cost. For example, percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG) within six weeks of a planned holiday date were associated with significantly increased cost (p = 0.002). For a patient with MFS, awaiting surgery for valve replacement was associated with a significant increase in cost (p = <0.001). If this surgery was planned within eight weeks of the holiday, the cost of the premium was also greater (p = 0.005). For all three conditions awaiting further investigation or management, including a non-routine appointment with a specialist, there was an increased cost (MI p = 0.002, MFS p = 0.002, DCM p = 0.003).

More severe disease and advanced symptoms were associated with reduced choice of travel insurance quotes. If a patient had suffered multiple MIs choice was reduced by 38.5 (IQR = 25.5–44.5, p = 0.028) and if there were ongoing symptoms of anginal chest pain or orthopnoea then choice was reduced by the same factor. If a patient sought hospital care three times or more this led to reduced choice for DCM by 4.5 (IQR = 4.3–10.1, p = 0.015).

The need for further investigation or medical intervention, including seeing a specialist at a non-routine appointment, led to a reduction in the choice of travel insurance (number of quotes reduced by MI 13.7, IQR = 11.2–14.1, p = 0.006; MFS2.1, IQR = 2.0–2.7, p = 0.034; DCM 3.0, IQR = 2.8–7.2, p = 0.047). Undergoing a cardiac procedure, such as having a PCI or CABG within six weeks of the holiday led to a reduction (4.8, IQR = 3.3–5.2, p=0.044) for a patient who had suffered an MI, and in a patient with MFS having a surgical operation within eight weeks of travel, reduced choice of travel insurance (2.9, IQR = 2.2–3.3, p = 0.045).

Postcodes were input from the highest and the lowest areas of Scottish Index of Multiple Deprivation,[9] and we found no difference in premium cost or choice of travel insurance quotes. Similarly, gender had no impact on insurance cost or choice of quotes.

Time from acute events

The median cost of travel insurance fell to a stable level six months after MI and after an acute event associated with MFS (Figure 3). Insurance cost for MI fell by nearly 50% and MFS by 75% at three months after an acute event. For DCM the cost fell more gradually reaching its lowest median cost at 12 months following an acute hospital admission. The choice of quotes mirrored the changes in cost with a peak increase for MI and MFS at 6 months and DCM at 12 months.

Discussion

This small study of three specific cardiac conditions clearly demonstrates significantly increased cost and reduced choice in travel insurance services for patients with MI, DCM and MFS compared with disease-free, age-matched controls. While the

Table 1 Impact of clinical factors on cost of travel insurance in myocardial infarction (MI), Marfan syndrome (MFS) and dilated cardiomyopathy (DCM)

Condition	Factor altered	Fold increase of median compared to age matched control with IQR	p-value
MI	Age matched control with no MI diagnosis or medical condition	1	-
	MI diagnosis with no symptoms or comorbidities	1.9 (1.8–2.2)	0.043
	Patient 1 (P1) (see Appendix C)	27.2 (20.4–29.1)	0.010
	Had PCI w/ angioplasty/stenting/CABG >6/52 (P1 had no surgical intervention)	2.8 (2.8–3.1)	0.036
	Not on waiting list for investigation/management, including non-routine appointment with specialist (P1 is on waiting list for investigation/ management)	7.1 (6.5–9.1)	0.012
	MI occurred <3/12 ago (P1 had MI >3/12)	35.7 (25.2–39.3)	0.002
	Had PCI w/ angioplasty/stenting/CABG <6/52 (P1 had no surgical intervention)	19.4 (15.6–21.3)	0.002
	Angina symptoms present after MI (P1 had no angina)	46.4 (38.0–66.8)	0.001
	>1 MI suffered (P1 had only 1 MI)	57.3 (37.5–65.7)	0.001
	Breathlessness or chest pain present when walking 200 m on the flat (P1 was asymptomatic)	86.2 (71.7–96.6)	<0.001
MFS	Age matched control with no MFS diagnosis or medical condition	1	-
	MFS diagnosis with no symptoms or comorbidities	1.1 (1.1–1.2)	0.034
	Patient 21 (P21) (see Appendix C)	4.8 (4.5–5.7)	0.001
	No abdominal or thoracic aneurysm present (P21 had thoracic aneurysm)	1.6 (1.4–1.8)	0.043
	Dissecting aneurysm not under supervision (P21 was under supervision)	2.8 (2.2–3.1)	0.021
	Arrhythmia present (P21 had no arrhythmia)	6.7 (5.9–7.2)	0.008
	Surgical correction of non-dissecting aneurysm <8/52 (P21 had a thoracic aneurysm but had not undergone surgical correction)	5.9 (3.4–6.9)	0.005
	Further investigation of cardiac valve disease with no previous surgery, including non-routine appointment with specialist (P21 needed no further Ix)	10.6 (8.3–11.1)	0.002
	Orthopnoea present (P21 did not suffer from orthopnoea)	12.4 (11.4–16.0)	0.001
	On waiting list for surgery/ stent (P21 was not on a waiting list)	32.7 (23.9–34.8)	<0.001
DCM	Age matched control with no DCM diagnosis or medical condition	1	-
	DCM diagnosis with no symptoms or comorbidities	1.3 (1.2–1.4)	0.022
	Patient 31 (P31) (see Appendix C)	8.3 (6.1–9.3)	0.013
	No symptoms of impaired contractility (P31 had left ventricular systolic dysfunction)	5.0 (4.7–5.4)	0.021
	No arrhythmia (P31 had Left bundle branch block)	6.2 (3.3–7.6)	0.030
	NYHA class 3 (P31 was NYHA class 2)	13.4 (12.1–17.5)	0.016
	1–2 unplanned visits to hospital in the last 12 months due to impaired contractility (P31 had not been hospitalised in the last 12 months)	11.3 (11.2–14.6)	0.010
	Orthopnoea present (P31 did not suffer from orthopnoea)	15.4 (15.1–21.2)	0.007
	2 or more unplanned visits to hospital in the last 12 months due to arrhythmia (see question 26)	13.7 (13.4–18.1)	0.008
	Further investigation or management required, including non-routine appointment with specialist (P31 did not need further investigation/ management)	16.9 (12.4–20.4)	0.003
	≥3 unplanned visits to hospital in the last 12 months due to impaired contractility (see question 26)	19.9 (18.4–32.0)	<0.001

Table 2 Impact of clinical factors on choice of quotes of travel insurance in myocardial infarction (MI), Marfan syndrome (MFS) and dilated cardiomyopathy (DCM)

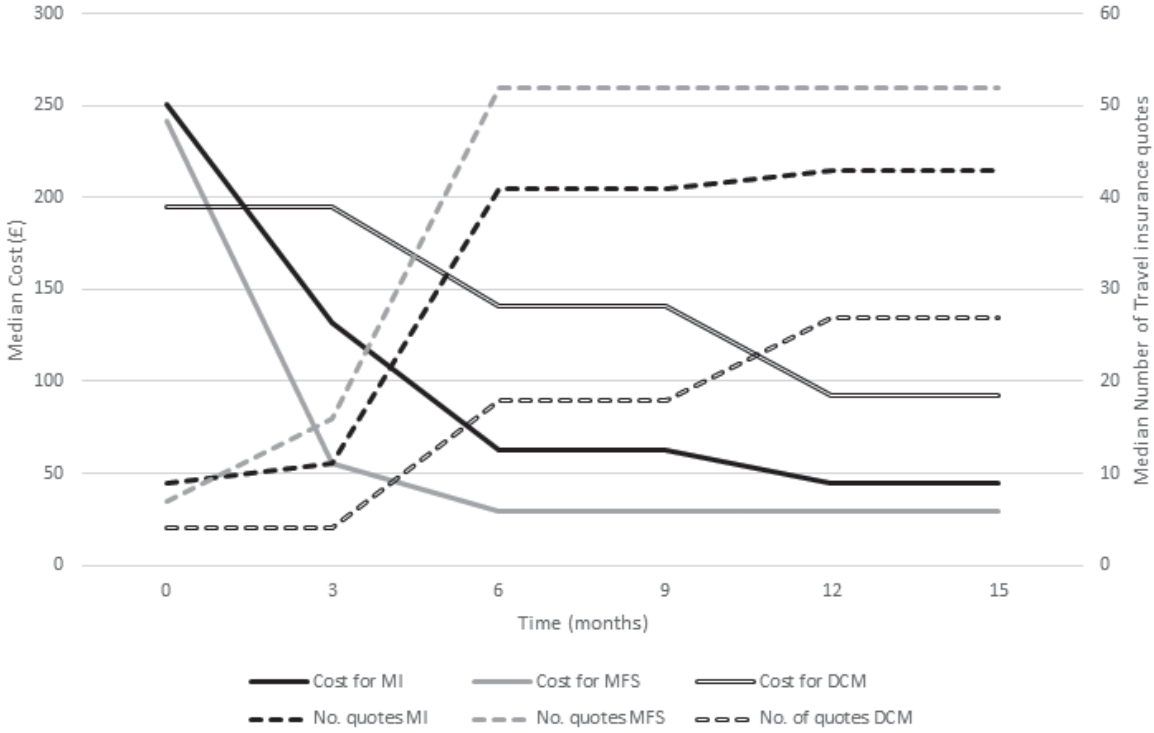
Condition	Factor altered	Fold decrease of median compared to age matched control with IQR	p-value
MI	Age matched control with no MI diagnosis or medical condition	1	-
	MI diagnosis with no symptoms or comorbidities	1.2 (1.1–1.2)	0.016
	Patient 1 (P1) (see Appendix C)	17.8 (10.8–19.9)	0.002
	Not on waiting list for investigation/management, including non-routine appointment with specialist (P1 is on waiting list for investigation/ management)	2.2 (1.9–2.5)	0.006
	Had PCI w/ angioplasty/stenting/CABG >6/52 (P1 had no surgical intervention)	1.3 (1.1–1.3)	0.044
	MI occurred >3/12 ago (P1 had MI <3/12 ago)	1.2 (1.1–1.3)	0.031
	Had PCI w/ angioplasty/stenting/CABG <6/52 (P1 had no surgical intervention)	4.8 (3.3–5.2)	0.011
	Angina symptoms present after MI (P1 had no angina)	38.5 (25.5–44.5)	0.001
	>1 MI suffered (P1 only had one MI)	38.5 (25.5–44.5)	0.001
	Breathlessness or chest pain present when walking 200m on the flat (P1 was asymptomatic)	38.5 (25.5–44.5)	0.001
MFS	Age-matched control with no MFS diagnosis or medical condition	1	-
	MFS diagnosis with no symptoms or comorbidities	1.2 (1.1–1.2)	0.049
	Patient 21 (P21) (see Appendix C)	1.2 (1.1–1.5)	0.042
	Arrhythmia present (P21 had no arrhythmia present)	1.9 (1.7–2.0)	0.031
	Further investigation of cardiac valve disease with no previous surgery, including non-routine appointment with specialist (P21 required no further Ix)	2.1 (2.0–2.7)	0.034
	Surgical correction of non-dissecting aneurysm <8/52 (P21 had a thoracic aneurysm but had not undergone surgical correction)	2.9 (2.2–3.3)	0.045
	Symptoms of breathlessness or impaired contractility present (P21 had no such symptoms)	2.7 (1.9–2.9)	0.017
	Orthopnoea present (P21 did not have orthopnoea)	3.2 (3.0–3.9)	0.009
	On waiting list for surgery/ stent (P21 was not a waiting list for surgery)	6.0 (5.7–13.3)	0.004
DCM	Age-matched control with no DCM diagnosis or medical condition	1	-
	DCM diagnosis with no symptoms or comorbidities	1.1 (1.1–1.3)	0.046
	Patient 31 (P31) (see Appendix C)	2.2 (2.0–3.2)	0.039
	No arrhythmia (P31 had Left bundle branch block)	1.5 (1.4–1.7)	0.052
	No symptoms of impaired contractility (P31 had left ventricular systolic dysfunction)	1.2 (1.1–1.3)	0.042
	1–2 unplanned visits to hospital in the last 12 months due to impaired contractility (P31 had not been hospitalised in the last 12 months)	2.4 (2.2–2.9)	0.035
	NYHA class 3 or greater (P31 was NYHA class 2)	2.3 (2.1–4.0)	0.028
	Further investigation or management required, including non-routine appointment with specialist (P31 did not need further investigation/ management)	3.0 (2.8– 7.2)	0.047
	2 or more unplanned visits to hospital in the last 12 months due to arrhythmia (See questions 25)	2.8 (2.2–6.3)	0.0.28
	Orthopnoea present (P31 did not have orthopnoea)	2.8 (2.2–6.3)	0.023
	≥3 unplanned visits to hospital in the last 12 months due to impaired contractility (See question 25)	4.5 (4.3–10.1)	0.015

Figure 3 Impact of 'time after event' on cost and availability
Impact of 'time after event' on cost (filled lines) and availability (dotted lines) of travel insurance quotes over 15 months following an acute event for MI (n = 5) patients; a planned surgical correction of a non-dissecting aneurysm in MFS (n = 5) patients and an unplanned hospital admission in 5 DCM (n = 5) patients. Key timepoints in clinical care are highlighted as 1, 2 and 3 with issues described below.

Timepoint 1: 0 months: - MI patients have just had an acute coronary event and are awaiting non-routine outpatient appointment (scheduled at 6 months) or echocardiogram. – MFS patients are awaiting a surgical correction or stenting of their aneurysm (scheduled at 3 months). - DCM patients have been admitted to hospital due to an acute worsening of their heart failure.

Time point 2: 3 months: - MI patients are awaiting clinic (scheduled at 6 months). – MFS patients have had their surgical procedure and have a non-routine appointment (scheduled at 6 months). – DCM patients are awaiting a non-routine appointment or investigation due to previous exacerbation (scheduled at 6 months).

Timepoint 3: 6 months: - MI patients have outpatient appointment and are discharged or enter into routine follow-up. – MFS patients have outpatient appointment and are discharged or enter into routine follow-up. – DCM patients have outpatient appointment and are discharged or enter into routine follow-up.



findings are not unexpected, the more striking feature is the wide variation in cost and choice between travel insurance companies suggesting that the risk assessment algorithms and processes applied to these patients vary considerably between companies. The reasons for this are unclear and could not be addressed within this relatively small observational study.

Two widely used comparison websites, GoCompare and MoneySupermarket, which are not currently recommended by the BHF, were used in this study. Both offered cheaper insurance than most other websites recommended by the BHF, although the quality of insurance product offered varied greatly, demonstrated by different quality ratings.[11] In contrast, GoCompare and MoneySupermarket showed the greatest reductions in choice of quotes for our patients. This may be because they offer quotes from many insurers, which may insure individuals with medical conditions but some may not. This is consistent with BHF guidance which recommends insurance companies that have a track record of being sympathetic to cardiac patients.

MFS patients showed the least difference in cost and choice of quotes compared to their age-matched controls. While MFS patients were younger (mean age 35 years) than MI and DCM patients (mean age 59.5 and 60 years respectively), the disparity in cost and quote choice is unlikely to be due to age alone. As MI patients were selected at the time of hospital discharge following their acute coronary event, most patients required further investigation or an outpatient appointment. These specific factors increased cost for all three cardiac conditions and are likely to be a key reason for the observed difference in cost and choice between MFS and MI patients, presumably due to the perceived high-risk time period of three months following an acute cardiac event. For patients with DCM, echocardiographic evidence of impaired left ventricular function, and ongoing breathlessness had a significant impact on cost and choice of quotes.

Factors associated with increased cost were associated with a reduction in choice of travel insurance quotes across all travel insurance websites and were more marked when associated with new or deteriorating symptoms. For example, the development of arrhythmia in either MFS or DCM or the presence of progressive anginal symptoms after MI were each associated with significantly reduced choice of insurance quotes.

The time at which travel insurance is purchased after hospitalisation or a surgical procedure had a significant effect on cost. If a patient simply delayed their travel plans for eight weeks after a surgical correction of an aneurysm in MFS or three months after MI, then the cost is greatly reduced and there is a much greater choice (Figure 3). The cost of insurance also falls if there is a routine outpatient appointment planned in contrast to a non-routine appointment. A summary of clinical factors affecting cost and choice of insurance is provided in Table 1. Patients should therefore simply be advised to defer their holiday plans beyond these time periods and by doing so could increase choice and save a considerable amount of money. However, since patients can sometimes wait for up to six months for a follow-up appointment in the National Health Service, telephone reviews or other methods of review that allow more timely decision-making could supports patients to obtain travel insurance more readily.

Insurance policy documents were reviewed to understand better the details and quality of medical cover provided in each policy. Features common to all policies included cover for emergency care with repatriation back to the individual's home country if required. Elective or preventative care or care that can wait until the patient has returned to their home country is not covered. The care they receive should be within a public or state hospital and not a private facility. If an investigation or treatment costs more than £500, the patient may need to contact the travel insurance company to authorise payment before a care plan is undertaken. A patient cannot usually claim for regular medications that they were taking for their cardiac condition prior to embarking on holiday, including lost, forgotten or insufficient supply. The patient should retain medical certificates and bills to provide evidence for any claims. The patient's regular doctor may be contacted in the event of a claim to provide supporting medical information.

Accurate details of medical illnesses are critically important when purchasing insurance, including details regarding prior cardiac diagnoses and acute coronary events. Certain scenarios can invalidate a purchased insurance, such as if the patient develops an acute illness related to undisclosed existing health problems or if an individual travels against medical advice. There are significant differences in policy details and cover between companies and it is recommended that an individual reads the policy carefully before purchase.

The approach used in this study could be applied to other disease conditions and if extended in this way could provide a highly valuable resource for a wide range of clinicians and patients regarding travel insurance. Previous research has explored the attitudes of patients with adult congenital heart disease towards travel insurance and there is certainly scope for further work in this area to guide patients' needs.[6]

While this study should help clinicians advise cardiac patients about how their condition will affect their travel insurance, there are limitations to the findings which merit further discussion. All patients with MI required further investigations or had plans for specialist review, which had a significant effect on the cost of premiums. The sample size is relatively small and only one patient was used from each condition to explore the effects of changing individual factors. Although 16 travel insurance websites were used, including comparison websites which include multiple insurers, there are other travel insurance websites that were not included in this study.

This study has explored the relationship between cardiac conditions and travel insurance and the relevance to patient care. A patient leaflet for each cardiac condition has been produced presenting the findings of this study (see Appendix B). Communication between healthcare professionals and patients is vital and the information in this study should facilitate better patient–healthcare provider discussions. Whilst the consideration of travel insurance may not feature prominently in the minds of clinicians when assessing and managing a patient's cardiac condition, this study has highlighted some key considerations to support decisions regarding travel and travel insurance. Knowledge of how cardiac conditions affect travel insurance costs and quotes justifies the importance of this study in providing patient-centred care.

References

1 Office of National Statistics. *Travel Trends: 2016*. https://www.ons.gov.uk/releases/traveltrends2016. (accessed 01/05/18).
2 Low JA, Chan DK. Air travel in older people. *Age Ageing* 2002; 31: 17–22.
3 Smith D, Toff W, Joy M et al. Fitness to fly for passengers with cardiovascular disease. *Heart* 2010; 96: ii1–6.
4 British Heart Foundation. *Insurance for Heart Conditions*. https://www.bhf.org.uk/heart-health/living-with-a-heart-condition/money-issues/insurance (accessed 01/05/18).
5 Lainscak M, Blue L, Clark AL et al. Self-care management of heart failure: practical recommendations from the Patient Care Committee of the Heart Failure Association of the European Society of Cardiology. *Eur J Heart Fail* 2011; 13: 115–26.
6 Pickup L, Bowater S, Thorne S et al. Travel insurance in adult congenital heart disease—Do they declare their condition? *Int J Cardiol* 2016; 223: 316-7.
7 British Heart Foundation. *Insurance: Insurance for heart patients*. https://www.bhf.org.uk/~/media/files/publications/medical-information-sheets/de_0885_insurance_v3-(2).pdf (accessed 02/03/18).
8 NHS Choices. *Travelling with a heart condition*. https://www.nhs.uk/live-well/healthy-body/travelling-with-a-heart-condition (accessed 02/03/18).
9 Scottish Government. *Scottish Index of Multiple Deprivation.* http://www.gov.scot/Topics/Statistics/SIMD (accessed 01/05/18).
10 Office of National Statistics. *Travel trends estimates: UK residents' visits abroad*. https://www.ons.gov.uk/peoplepopulationandcommunity/leisureandtourism/datasets/ukresidentsvisitsabroad (accessed 12/02/18).
11 Defaqto. *Travel Insurance (Annual)*. https://www.defaqto.com/star-ratings/travel/travel-insurance-annual/?id=53117 (accessed 02/05/18).