

Farmers Have Hearts Cardiovascular Health Programme



Summary Impact Report





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Acknowledgements

The 'Farmers Have Hearts' Cardiovascular Health Programme (FHH-CHP) is a unique health behaviour change intervention tailored for male farmers involving collaboration between the National Centre for Men's Health (NCMH) at IT Carlow, Teagasc, Irish Heart Foundation (IHF), Health Service Executive (HSE), University College Dublin (UCD) and Glanbia Ireland. Whilst supportive of the research, none of these stakeholders had any influence on the content or findings of the study.

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Ethical Approval

This research was granted ethical approval from the ethics committee of the Institute of Technology Carlow (IT Carlow).

The FHH-CHP Programme is registered in the International Standard Randomised Controlled Trial Number Register (ISRCTN26792329)

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Abbreviations

Audit-C	Alcohol Use Disorders Identification Test
BMI	Body Mass Index
BP	Blood Pressure
CHD	Coronary Heart Disease
CVD	Cardiovascular Disease
FHH-CHP	Farmers Have Heart Cardiovascular Health Programme
GP	General Practitioner
HBC	Health Behaviour Change
HDL-C	High-Density Lipoproteins – Cholesterol
HSE	Health Service Executive
IHF	Irish Heart Foundation
IT Carlow	Institute of Technology Carlow
LDL-C	Low-Density Lipoprotein - Cholesterol
M-Health	Mobile Health
MmHg	Millimetre of Mercury
Mmol/L	Millimoles per Litre
NCMH	National Centre for Men's Health
OHS	Occupational Health and Safety
PA	Physical Activity
SES	Social Economic Status
SWEMWBS	Short Warwick Edinburgh Mental Wellbeing Scale
TC	Total Cholesterol
TG	Triglycerides
UCD	University College Dublin
WHO	World Health Organisation

Section 1: Executive Summary: Key Messages

This summary report is a follow-up to the 'Farmers Have Heart Cardiovascular Health Programme – Summary Baseline Report' (van Doorn *et al.*, 2020). That report provided an overview of the baseline cardiovascular health status, and a summary of socio-demographic and farming characteristics, of the farmers participating in the Farmers Have Hearts Cardiovascular Health Programme (FHH-CHP).

This report assesses the impact of FHH-CHP on the cardiovascular health of participating farmers. The assessment comprises three aspects; evaluating the extent of health behaviour change (HBC), assessing follow up use of GP services if advised to do so by the nurse during the baseline health check as well as analysing the effectiveness of the HBC intervention group in comparison to the usual care group.

1.1 Farmers Have Hearts Cardiovascular Health Programme

The FHH-CHP is a collaboration between the National Centre for Men's Health (NCMH) at IT Carlow, Teagasc, Irish Heart Foundation (IHF), HSE, UCD and Glanbia Ireland. The programme is a comprehensive health

intervention targeted at male farmers working in Ireland. It consists of a baseline health check, followed by a health behaviour change (HBC) intervention and a repeat health check at Week 52 (Figure 1)¹.

Farmers Have Hearts – Cardiovascular Health Programme

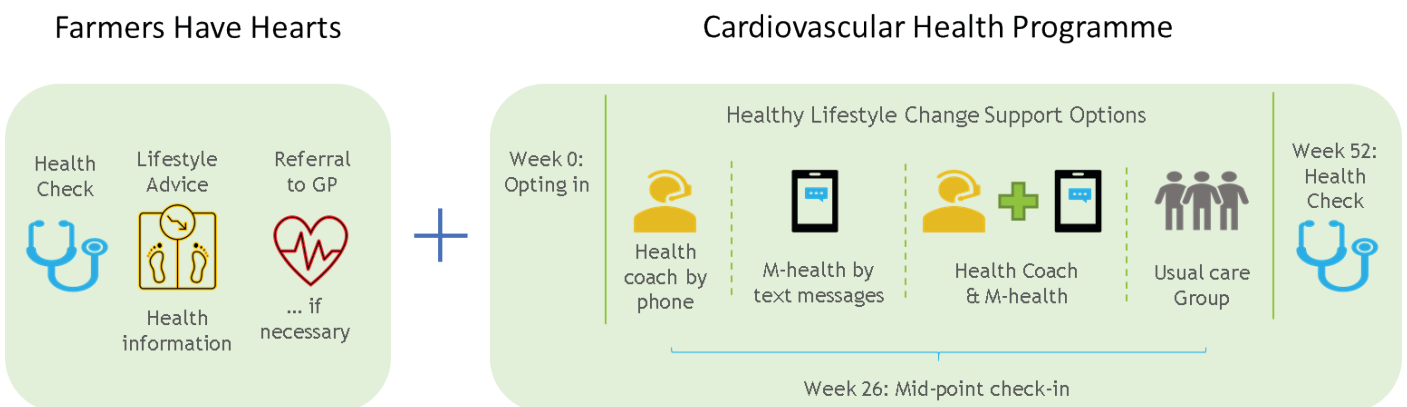


Figure 1: Farmers Have Hearts – Cardiovascular Health Programme

¹ Detailed programme information including the description of the evolution of the FHH programme can be found in the Detailed Impact Report.

The HBC intervention offered participants a choice of three delivery methods: M(Mobile)-health by text messages, health coach by phone or a combination of both. Farmers could also opt for the 'usual care' group which consisted of participation in the baseline and Week 52 health check and research data collection. Research data collection took place face-to-face at baseline and Week 52 (health check and survey) and by phone at Week 26 (survey only).

The overall goal of the FHH-CHP is to advance public health knowledge through original research that assesses the effectiveness of a health behaviour change programme among Irish farmers. The project was guided by three outcome objectives:

- Reducing cardiovascular disease risk;
- Achieving sustainable health behaviour change;
- Tracking follow-up use of GP services.

Empowering farmers to take greater control of their health was at the heart of this research. Empowerment in health promotion focuses on the needs of specific communities with respect to social and cultural context and to promoting informed-decision making to enable people to take control over health impacting factors (World Health Organization, 1986; Barr *et al.*, 2015). In the FHH-CHP this was reflected in oral and written programme information to aid farmers with informed decision-making and giving them a choice to extend the usual FHH-CHP care with a HBC intervention. Providing a choice of intervention increases feelings of autonomy and enables a partnership in health between provider and participant (Barr *et al.*, 2015).

By opting for this programme ethos and model, this research was interested in exploring if personal choice of HBC delivery method prompted health behaviour change to improve cardiovascular health, i.e. we are interested if the FHH-CHP is effective rather than which HBC delivery option is 'best'.

The validity of this approach was noted by the research team members who observed that farmers carefully considered which delivery method suited their personal situation. This resulted in farmers with specific socio-demographic and farming characteristics choosing intervention delivery methods that fitted with their personal circumstances (Figure 2). As a consequence, comparing and contrasting between delivery methods would show intervention effectiveness for those specific farmers rather than a generic impact.

This report therefore focuses on assessing the 'total' intervention effectiveness among the farmers in the HBC intervention compared to the usual care group, i.e. those that chose not to participate in the HBC element of the programme.

Farmers Have Hearts – Cardiovascular Health Programme

Association between socio-demographic and farming characteristics and intervention delivery choice

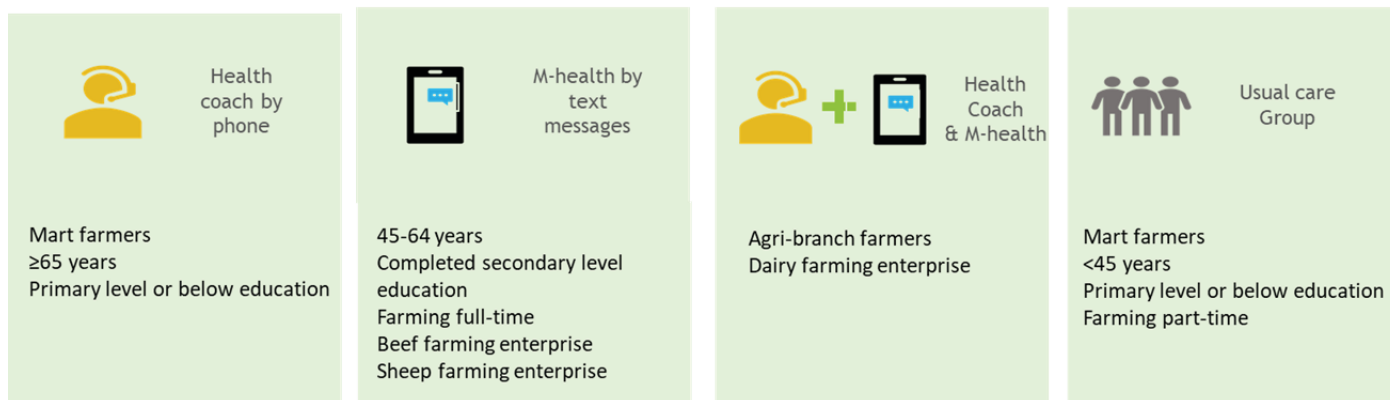


Figure 2: Associations between socio-demographic and farming characteristics and intervention delivery choice

The study findings inform best practice approaches to health interventions targeted at (male) farmers and provide a better understanding of the mechanisms for HBC. These insights can also be translated into health promotion interventions for other so-called 'hard-to-reach' groups of men. The

study findings can also potentially inform how behaviour change mechanisms can be used beyond the boundaries of health to influence other aspects of farming practice such as occupational health and safety (OHS) and adoption of farming practices or technologies.

Reading the FHH-CHP evaluation data

- » Data is available from three time points: baseline, Week 26 and Week 52;
- » The FHH-CHP datasets were matched based on the total number of participants taking part at that time-point (See Section 4.3, Figure 5 in the Detailed Impact Report);
- » Results were calculated on the available responses for each question and therefore the total numbers reported, signified by 'n', vary throughout the report;
- » Change in health outcomes and behaviours is demonstrated by proportional differences between time points.
- » Statistical analysis was undertaken to identify whether observed changes at Week 52 were significantly different to Week 0 or Week 26 results. Results that were statistically significantly different, i.e. unlikely to be the result of random chance, were identified using McNemar 2x2 analysis. The detailed results are presented in the Detailed Impact Report.

This report examined differences in outcomes among the farmers in the HBC intervention as a total compared to the usual care group. The findings are also illustrated with quotes from participating farmers which not only gives voice to the participants but also supports the reader in understanding the impact of the FHH-CHP. These quotes are derived from open questions from Week 26 and Week 52 surveys.

1.2 Overview of Research

- This research focused on two distinct groups of livestock farmers; those predominantly focusing on cattle production and those predominantly producing milk. Data collected from cattle farmers took place at 16 livestock marts (referred to as 'mart' farmers) whilst data collected from farmers with a dairy enterprise took place at 16 Glanbia Ireland branch locations (referred to as 'agri-branch' farmers). In the course of this work we visited 12 counties in the South, East and Midlands of Ireland. Of the total study group (n=868), 49.4% (n=429) were 'mart' farmers and 50.6% (n=439) 'agri-branch' farmers.
- At baseline (n=868), three in four farmers (73.5%; n=638) agreed to participate in the HBC intervention. Of these, one in three (32.9%; n=286) opted for the M-health, 22.7% (n=197) opted for the combination and 17.9% (n=155) for the health coach. The remaining 26.5% (n=230) farmers constituted the usual care group.
- Week 26 comprised a phone survey in which n=801 (92.2%) farmers participated.
- Week 52 consisted of a repeat health check followed by a final face-to-face survey and this took place at the same locations as baseline. Week 52 data collection took place from June 2019 – March 2020.

Impact of Covid-19 pandemic on FHH-GHP

The Week 52 health checks were postponed in March 2020 due to the Covid-19 outbreak. As a result, 118 farmers did not get the opportunity to take part in the repeat health check. These farmers will be invited for a (repeat) health check when this service resumes post-pandemic. However, they were excluded from the Week 52 data.






- The total of eligible farmers for Week 52 was corrected for n=11 farmers who dropped out of the full FHH-GHP and n=118 farmers who had their Week 52 health check postponed due to the Covid-19 pandemic, leading to an eligible Week 52 sample size of n=739.
- At week 52, 456 (61.7%) farmers took part in the repeat health check and 61.0% (n=451) participated in the Week 52 survey, permitting change from baseline and change from week 26 to be evaluated. Of these, 40.6% (n=183) were mart and 59.4% (n=268) agri-branch farmers.

Section 2 - Key results







2.1 Objective 1: Reducing cardiovascular health risk

“An irregularity was found in my heart and I was told to go to the doctor. That saved my life!”


Farmers Have Hearts Cardiovascular Health Programme - Key health outcomes Changes recorded between Baseline – Week 52

Multiple risk factors profile	Baseline	Week 52	Baseline -Week 52 difference	p value*
 ≥4 risk factors for CVD	45.1%	39.0% ↓	6.1%	0.02
Objective clinical measurements				
 Blood pressure ≥140-90 mmHg	35.6%	27.3% ↓	8.3%	<0.01
 Lipid profile				
Total cholesterol ≥5.0 mmol/L	45.7%	43.0% ↓	2.7%	ns
LDL-C ≥3.0 mmol/L	45.6%	47.4% ↑	1.8%	ns
Triglycerides ≥1.7 mmol/L	50.3%	43.1% ↓	7.2%	<0.01
HDL-C ≤1.00 mmol/L	30.0%	38.7% ↑	8.7%	<0.01
 Blood glucose ≥7.0 mmol/L (non-fasting)	25.6%	17.2% ↓	8.4%	<0.01
 BMI kg/m ² ≥ 25.0	85.0%	84.5% ↔	0.5%	ns
Waist circumference ≥94 cm	79.1%	78.0% ↓	1.1%	ns

Self-reported health-outcomes and behaviours

	Baseline	Week 52			
 Smoking	9.1%	6.9%	↓	2.2%	<0.01
 Standard drinks per week ≥17	11.5%	8.0%	↓	3.5%	ns
 Harmful drinking pattern	35.3%	38.3%	↑	3.0%	ns
 Physically inactive	31.8%	23.8%	↓	8.0%	0.02
 Stressed ('often'/'very often')	12.4%	8.5%	↓	3.9%	0.04
 Wellbeing 'poor' or 'below average'	28.5%	27.2%	↓	1.3%	ns
Advised to visit GP based on health check outcomes	74.4%	65.6%	↓	8.8%	<0.01

*p<0.05 indicates statistical significance




 Effectiveness of HBC intervention in relation to change in multiple risk factor profile at Week 52	HBC Intervention	Usual Care	p value*
	Improved multiple risk factor profile	44.0%	32.0%

*p<0.05 indicates statistical significance


2.2 Objective 2: Health behaviour change

“More greens in the diet and less sugar”

Self-reported health behaviour change Week 26 – Week 52

	Week 26	Week 52	p value*
 Having made health behaviour change (HBC)	71.0%	81.5%	0.01
 Incorporation of lifestyle changes in my daily life (maintenance)	19.9%	84.2%	0.01
Most cited lifestyle changes			
Improved diet	76.0%	54.3%	
Increased levels of physical activity	37.0%	45.8%	
Decreased levels of stress	8.9%	2.7%	
Reduced alcohol consumption	3.3%	2.9%	
Stopped smoking (n=40)	15.9%	9.1%	
 Health difference as a result of making HBC	Not available	82.3%	
Feel fitter / more energy		49.6%	
Feel better overall		19.1%	
Weight loss		14.2%	
Improved physical health		9.6%	
Improved mental health		9.3%	


*p<0.05 indicates statistical significance


 Effectiveness of HBC intervention	HBC intervention	Usual Care	p value
Week 26 Made HBC	78.3%	44.3%	0.04
Week 52 Made HBC	86.7%	62.5%	ns
Week 26 'Having incorporated lifestyle changes in their daily life' (Maintenance)	18.6%	28.2%	0.04
Week 52 'Having incorporated lifestyle changes in their daily life' (Maintenance)	85.7%	76.4%	<0.01

*p<0.05 indicates statistical significance

2.3 Objective 3: Follow-up use of GP services

"I got the full NCT - all was fine"

	Week 26
 Follow-up use of GP services	53.6%

 Effectiveness HBC intervention in relation to follow-up use of GP services	HBC intervention	Usual Care	p value*
Yes	53.8	53.3	<0.01

*p<0.05 indicates statistical significance

2.4 Farmers' Experiences of the Farmers Have Hearts Cardiovascular Health Programme

"I liked the friendliness and the genuine interest shown in you"

At Week 52, farmers were asked to rate – on a scale of 1 to 5 (1 being poor 5 being excellent) their experience of taking part in the different programme elements. Most farmers provided feedback on the health checks (98.2%; n=437) and their experience of the overall programme (98.0%; n=434) as a four out of five or higher. Among those

farmers who participated in the health coach intervention (n=135), the majority (88.9%; n=120) rated their experience as a four out of five or higher. Similarly, with the M-health (n=141), the majority (89.3%; n=126) rated their experience as a four or higher (Figure 3).

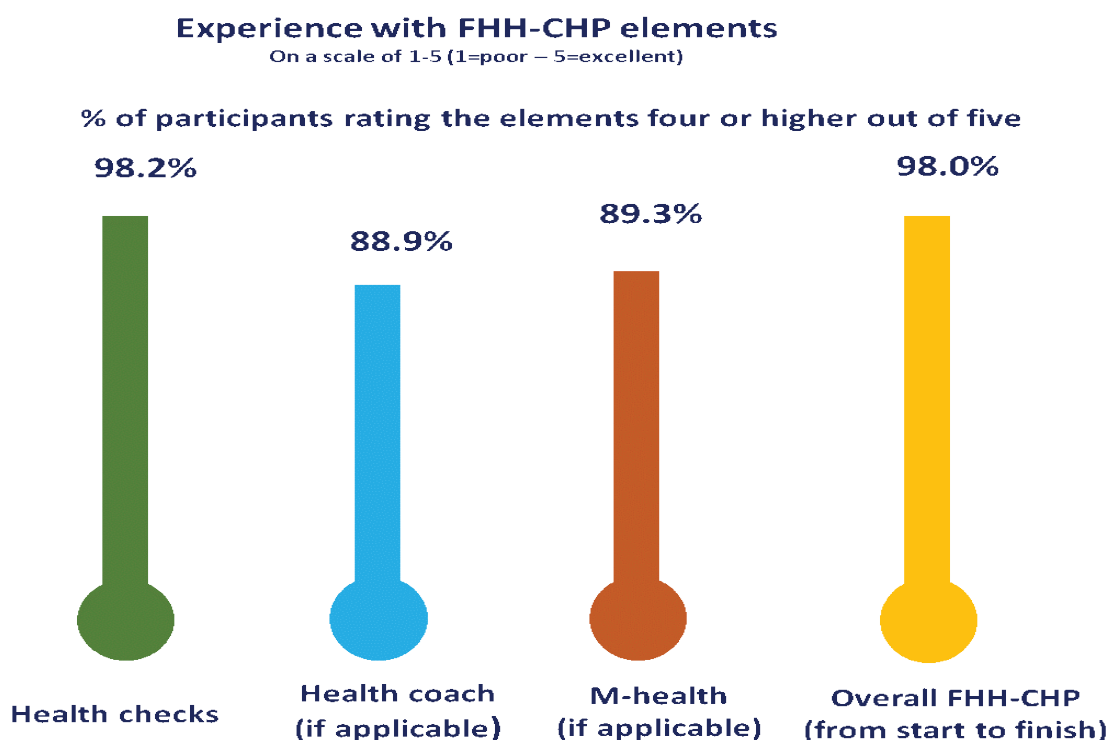


Figure 3: Experience with the FHH-CHP elements

Section 3 - Key messages

“It was easy going and I could ask any question comfortably”

The FHH-CHP evaluation reinforces the value of well-designed, gender-sensitised and strengths-based HBC programmes to meet the needs of and engage with 'hard-to-reach' groups. The high participation, low attrition rates and highly positive rating of their experience of the programme, demonstrate that FHH-CHP was successful in engaging a large group of farmers and supporting them to make HBC and reduce their risk of CVD.

Key factors for engaging farmers in health were the application of gender-sensitive and farmer centred approaches in combination with the personal approach and building of rapport between farmers and the FHH-CHP 'team' including the nurses, research team members, health promotion staff and health coach. In particular, the close relationships forged with farmers by the health coach and research team members – because of their ongoing contact through follow-up phone-calls or data collection and health check engagements – were instrumental to programme adherence and the overall success of the programme.

“Some might say you're pushy but we farmers need that, otherwise we disappear, literally”

The socio-demographic and farming characteristics of participating farmers indicate that the FHH-CHP was successful in reaching those farmers who have traditionally been classified as 'hard-to-reach' (van Doorn *et al.*, 2020). Critically, the vast majority of farmers who opted to take part in the HBC intervention, adhered to intervention participation and more than three in five farmers came back for the repeat health check.

These findings demonstrate that with the 'right approach' farmers are not only interested in their health; they are also willing to 'commit' and 'stick' to a year-long cardiovascular health programme. These findings debunk the myth that farmers are not interested in their health or are 'hard-to-reach' with regard to health interventions.

3.1 Objective 1: Reduced cardiovascular risk

“I'm not out of breath as quick. And I have more energy”

At Week 52 (n=451), the proportion of farmers having ≥ 4 risk factors for CVD (39.0%, n=176) had significantly decreased compared to baseline (45.1%, n=203). More than two in five farmers (41.2%; n=186) had improved their multiple risk factor profile, with more mart farmers (45.4%; n=83) than agri-branch farmers (38.4%; n=103) having done so. This is a particularly interesting finding in light of the socio-demographic and farming characteristics of mart farmers

reported at baseline, which placed them at higher health risk – more likely to be older (>65 years), to be single, to have lower educational attainment (primary only or some secondary level), to be involved in beef farming which is linked to lower family farm income (Donnellan, 2020), and to be farming part-time. These findings are consistent with previous research which suggests that those with higher baseline CVD risk tend to benefit more, and conversely, those with

low or moderate CVD risk at baseline tend to benefit less from HBC interventions (Al Mheid *et al.*, 2016). In this study, it is likely that those with low or moderate risk at baseline were more likely not to engage in a FHH-CHP HBC intervention. Further data analysis of the study findings is needed to understand the interaction of socio-demographic and farming characteristics, baseline health status, engagement with HBC, and intervention adherence on risk factor reduction.

Most individual risk factors showed a proportional improvement at Week 52 compared to baseline. Notwithstanding this, BMI at Week 52 was similar to baseline and LDL-C and HDL-C had disimproved. A healthy diet and increased levels of physical activity have been found to be a key risk controlling factor in relation to lowering LDL-C and elevating HDL-C (Musunuru, 2010). Although 'improved diet' and 'increased levels of PA' were reported as behaviour changes among farmers at both Week 26 and Week 52 respectively, it was not

associated with improvement in BMI, LDL-C and HDL-C. Research has found that the type of exercise (Kokkinos, 2008) and dietary changes (Musunuru, 2010) are important in relation to lipid management and weight loss. Although the study observed no difference between Baseline and Week 52 BMI classification, a small proportion of farmers had reduced their waist circumference. This could indicate muscle gain and abdominal fat-loss.

Further in-depth analysis of study data is warranted to examine associations between HBC engagement and BMI / waist circumference as well as correlations between educational attainment and non-follow-up with recall of advice to visit the GP as part of FHH-CHP. In FHH-CHP context, including dietary sessions for farmers should be investigated in future programme implementation. These sessions should be in line with the gender-sensitive and farmer centred ethos of the FHH-CHP and based on choice and autonomy.

3.2 Objective 2: Health behaviour change

“More walking instead of using the tractor to get to places”

Participation in the FHH-CHP prompted a large group of farmers to change health behaviours with 81.5% (n=335) of farmers reporting having made some form of HBC at Week 52 which had increased from Week 26 (71.0%; n=292). This is a notable outcome when one considers that an estimated 60/70% of HBC attempts fail (Ogden *et al.*, 2006). Although self-reported HBC is difficult to measure due to over- and underestimation (Glasgow *et al.*, 2005), the

positive findings in relation to reduced cardiovascular risk of this study group offer a solid base to conclude that a high proportion of farmers did make HBC. This conclusion is supported by the reductions observed in many of the objective clinical measurements.

“I learned to take more time to myself and not feel guilty for it”

Social support has been found to facilitate HBC 'maintenance' (Murray et al., 2013). Considering that farmers work long and unsociable hours and typically live in remote areas, farmers especially could benefit from

a support network to enable them to engage in HBC. More research into setting up health support systems for farmers as part of FHH-CHP, including consideration of extension or discussion group, is recommended.

3.3 Objective 3: Follow-up use of GP services

“Blood tests were re-done and my medication was altered as a result”

At Week 26, more than one in two farmers (53.6%; n=428) reported having visited their GP as a result of taking part in FHH-CHP.

having received a standardised letter for the GP and having this advice marked on their health check results booklet which they were encouraged to take home with them.

Health screening plays a pivotal role in early detection of risk factors for CVD (Piepoli et al., 2016). Recall of medical messages as part of health screening is essential for participants to be able to make informed decisions on their health and to adhere to treatment (Ward et al., 2009; Selic et al., 2011). Farmers, n=579, who were advised to visit their GP by the nurse, completed the survey at Week 26. Of these, 39.7% (n=230) reported either not having been advised or not recalling having been advised to visit their GP. This despite

Lower education levels and the use of multiple messages have been found to negatively impact medical information recall (Selic et al., 2011). More research is warranted into barriers for recall of medical messages among this cohort, including socio-demographic and farming characteristics, adherence to more restrictive masculinity norms, health status and health perception during health screening.

3.4 Recommendations for programme implementation and scale-up

“I realised that if someone shows this level of interest in me, I should take an interest in myself as well. What a shame the programme stops here”

1. Under the auspices of the existing FHH-CHP partnership, develop an implementation plan, with due consideration to required resources, for the scale up and national roll-out of the FHH-CHP programme. Particular consideration should be given to applying the findings of this research by:
 - Adopting a farmer-centric approach i.e.

using strengths-based, outreach and gender-specific approaches to engage farmers.

- Making the FHH-CHP programme available to farmers in all parts of Ireland.
- Expand the existing FHH-CHP partnership through the establishment

of a 'Farmer Health Partnership' to support the nationwide roll-out of the FHH-CHP.

- Supporting the development of capacity building measures amongst the various stakeholders concerned with farmer health.
 - Implementing parallel initiatives to support the core objectives of the FHH-CHP programme based on current evaluation recommendations.
 - The FHH-CHP objectives should be embedded in wider efforts that support a healthy workplace environment for farmers.
2. **Supported by the existing FHH-CHP partnership and sufficient resources, the Irish Heart Foundation should assume the lead role in co-ordinating and delivering the next scale-up phase of the programme.**
 3. **Ensure that the scale-up and roll out of FHH-CHP is underpinned by research and evaluation.** Evidence-based approaches

to intervention design and delivery need to be informed by on-going action research and programme evaluation. This should include:

- Further in-depth FHH-CHP data-analysis to develop better understanding of the associations between socio-demographic and farming characteristics and various health outcomes and health behaviours.
- An increased focus on qualitative research that explores all key stakeholders' experiences of the programme that can help to improve programme effectiveness and address the barriers to farmers accessing health services.
- The commissioning of a longitudinal programme of research to monitor and understand the long-term effectiveness of the programme.
- Addressing all aspects of evaluation - programme, impact, economic impact and process evaluation.

References

- Al Mheid, I., Kelli, H.M., Ko, Y.A., Hammadah, M., Ahmed, H., Hayek, S., Vaccarino, V., Ziegler, T.R., Gibson, G. and Lampl, M. (2016) 'Effects of a Health-Partner Intervention on Cardiovascular Risk'. *Journal of the American Heart Association*, 5(10), e004217.
- Barr, P.J., Scholl, I., Bravo, P., Faber, M.J., Elwyn, G. and McAllister, M. (2015) 'Assessment of Patient Empowerment - A Systematic Review of Measures'. *PloS One*, 10(5), e0126553, Available: <http://dx.doi.org/10.1371/journal.pone.0126553>.
- Donnellan, T., Moran, B., Lennon, J., Dillon, E., (2020). *Teagasc National Farm Survey 2019 Preliminary Results*. Teagasc, Available: <https://www.teagasc.ie/media/website/publications/2020/TeagascNFS2019-Preliminary-Results.pdf>
- Glasgow, R.E., Ory, M.G., Klesges, L.M., Cifuentes, M., Fernald, D.H. and Green, L.A. (2005) 'Practical and relevant self-report measures of patient health behaviors for primary care research'. *The Annals of Family Medicine*, 3(1), 73-81.
- Kokkinos, P. (2008) 'Physical activity and cardiovascular disease prevention: current recommendations'. *Angiology*, 59(2_suppl), 26S-29S.
- Murray, J., Fenton, G., Honey, S., Bara, A.C., Hill, K.M. and House, A. (2013) 'A qualitative synthesis of factors influencing maintenance of lifestyle behaviour change in individuals with high cardiovascular risk'. *BMC Cardiovascular Disorders*, 13(1), 48-48, Available: <http://dx.doi.org/10.1186/1471-2261-13-48>.
- Musunuru, K. (2010) 'Atherogenic Dyslipidemia: Cardiovascular Risk and Dietary Intervention'. *Lipids*, 45(10), 907-914, Available: <http://dx.doi.org/10.1007/s11745-010-3408-1>.
- Ogden, J., Karim, L., Choudry, A. and Brown, K. (2006) 'Understanding successful behaviour change: the role of intentions, attitudes to the target and motivations and the example of diet'. *Health Education Research*, 22(3), 397-405, Available: <http://dx.doi.org/10.1093/her/cyl090>.
- Piepoli, M.F., Hoes, A.W., Agewall, S., Albus, C., Brotons, C., Catapano, A.L., Cooney, M.-T., Corrà, U., Cosyns, B., Deaton, C., Graham, I., Hall, M.S., Hobbs, F.D.R., Løchen, M.-L., Löllgen, H., Marques-Vidal, P., Perk, J., Prescott, E., Redon, J., Richter, D.J., Sattar, N., Smulders, Y., Tiberi, M., van der Worp, H.B., van Dis, I., Verschuren, W.M.M., Binno, S. and Group, E.S.C.S.D. (2016) '2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representati'. *European Heart Journal*, 37(29), 2315-2381, Available: <http://dx.doi.org/10.1093/eurheartj/ehw106>.
- Selic, P., Svab, I., Repolusk, M. and Gucek, N.K. (2011) 'What factors affect patients' recall of general practitioners' advice?'. *BMC Family Practice*, 12(1), 1-8.
- van Doorn, D., Richardson, N., Meredith, D., McNamara, J., Osborne, A. and Blake, C. (2020). *Farmers Have Hearts Cardiovascular Health Programme*. Detailed Baseline Report. Carlow: Teagasc, National Centre for Men's Health at IT Carlow, Available: <https://www.teagasc.ie/publications/2020/farmers-have-hearts-cardiovascular-health-programme.php>
- Ward, M., McGee, H., Morgan, K., Van Lente, E., Layte, R., Barry, M., Watson, D., Shelley, E. and Perry, I. (2009). *SLÁN 2007: Survey of*

Lifestyle, Attitudes and Nutrition in Ireland. 'One Island – One Lifestyle?' *Health and lifestyles in the Republic of Ireland and Northern Ireland: Comparing the population surveys SLÁN 2007 and NIHSWS 2005*. Dublin: Department of Health and Children, Available: https://www.lenus.ie/bitstream/handle/10147/83717/slan_oneisland.pdf?sequence=1&isAllowed=y

World Health Organization (1986) 'Ottawa Charter for Health Promotion'. 1986 (No. WHO/EURO: 1986-4044-43803-61677). World Health Organization. Regional Office for Europe.



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