

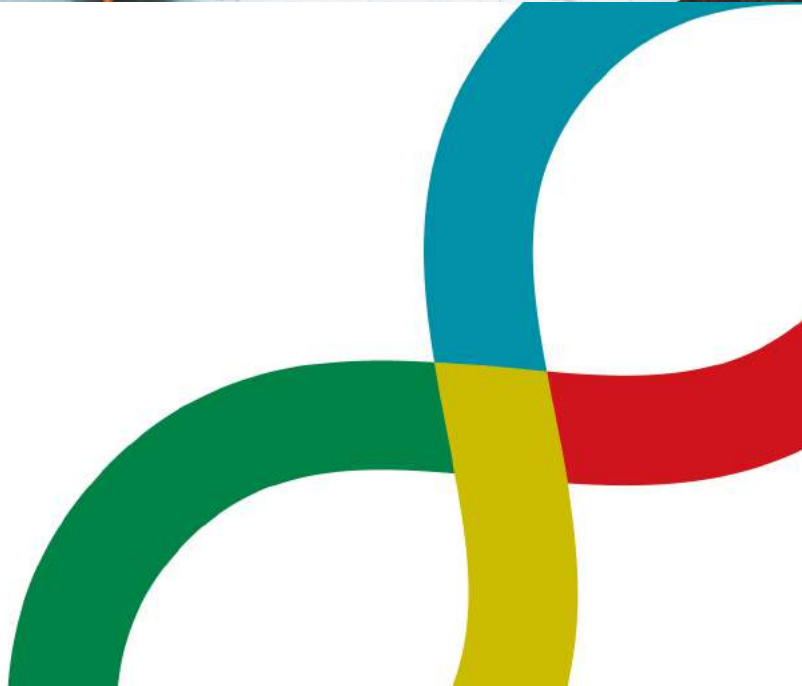
Canolfan Iechyd y Boblogaeth Centre for Population Health



Canolfan Genedlaethol ar gyfer Ymchwil ar Iechyd a Llesiant y Boblogaeth
National Centre for Population Health & Wellbeing Research



2021-2022 Annual Report





Contents

Foreword	1
Key Achievements	2
About Us	3
Work Programmes	
Healthy Development	5
Healthy Working Life	11
Patient Public Involvement	15
Capacity Building	17
Dissemination	19
International Collaboration	21
Conclusion and Going Forward	23

Foreword

Hello and welcome to the Annual Report for the National Centre for Population Health & Wellbeing Research 2021-2022, funded by Health and Care Research Wales.

The Centre has continued to prioritise policy relevant research into responding to challenges presented by the COVID-19 pandemic. Research has concentrated on understanding the impact COVID-19 has had on people in Wales, focusing on schools, care homes, vaccination uptake, and impact for those with chronic health conditions. In addition, we have collaborated with other universities across the UK to examine the impact of COVID-19 for those with chronic conditions.

Working during the pandemic has also provided opportunities to develop and evaluate new methods within international collaboration and partnerships.

We have also made considerable progress in our Healthy Development and Healthy Working Life programmes, as well as in our collaboration and capacity building work.

Studies have focused on evaluating the first 1000 days of life and the early years for infants. The Born in Wales project has continued to facilitate the understanding of experiences expectant and new parents undergo; this enables the provision of appropriate help and support to give their child the best start. This information is now being utilised by Midwives throughout Wales, helping to improve the experience of parents, aiming to build a better understanding of any challenges they may face.

We have examined the changing landscape of employment including working from home and the impact this new model has on people's health and well-being.

We have worked to support early career researchers and provide internships for individuals hoping to undertake a career in population health. Our understanding of public and patient involvement has been further developed for a population health context through the conduct of a comprehensive systematic review; consequently, patient representatives are increasingly being integrated into the strategic management and delivery of key objectives to meet the National Standards for public and patient involvement in research.

Finally, the Centre brought together over 250 delegates from 20 countries at our inaugural International Collaboration Conference to facilitate sharing experiences and working together on tackling population health inequalities in Wales and beyond.

Thank you for taking the time to read our report, we hope you enjoy.

Kind regards
The Executive Board



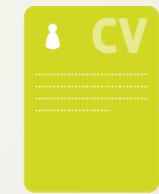
Key Achievements 2021-2022

Health and Care Research Wales infrastructure award to the Centre



Direct funding awarded

£653k



Jobs created through direct funding

14.5

Grants won during reporting period

Grants Won	Led by Centre	Through Collaborating
Number	4	9
Value	£442.5k	£29.6m
Funds to Wales	£442.5k	£19.1m
Funding to Centre	£442.5k	£1.2m
Additional jobs created for Wales	2	9.5
Additional jobs created for Centre	3	N/A



Number of publications



Number of public engagement events



Number of public involvement opportunities

About Us





We are the National **Centre for Population Health** & Wellbeing Research, funded by the Welsh Government through Health and Care Research Wales. We undertake research by comprehending data that can help support and improve people's health and well-being throughout their life. Our work explores and tackles some of the most difficult public health challenges, and provides new insights to help policy and decision-makers make informed improvements to population health – including, for example, by reducing social inequalities and healthcare costs.

To achieve this we bring together a team of researchers, statisticians, and data analysts from the Universities of Swansea, Cardiff, and Bangor alongside Public Health Wales as well as our third sector partner Children In Wales to understand, evaluate, and inform population health improvements.

Our research takes a life-course approach and is comprised of Healthy Development and Healthy Working Life work programmes:





Healthy Development

Our research informs work that aims to give children a healthy and happy start in life. There is considerable evidence that a person's experiences in childhood play a vital part in shaping their future – with positive early years child development being associated with good health and educational outcomes in childhood, and better health and employment outcomes in adulthood. Our research covers the following areas:

-  Maternal health and well-being (first 1000 days).
-  Early years (0-7 years) evaluations.
-  Children and Young People, teenagers and community interventions.
-  Impact of Adverse Childhood Experiences.

Healthy Working Life

Our research aims to identify some of the key health challenges many face through their lives. We aim to understand how these challenges can limit people's chances of living full healthy and happy lives. We also aim to understand the wider determinants of health and how these can limit these opportunities. Our research covers the following areas:

-  Chronic conditions.
-  Workplace health.
-  Health challenges in at risk groups.
-  Built environment evaluations.

About Us

Our Executive Board encompasses the research leads who are responsible for developing and implementing the Centre's policies and programmes of work. Our research team is comprised of our data analysts, statisticians, and research officers who are responsible for undertaking and supporting research within our Healthy Development and Healthy Working Life work packages. Our Core Centre team is made up of those staff responsible for the operational day to day running of the Centre, supporting both the Executive and research teams to undertake and fulfil the Centre's research objectives.



Prof Sinead Brophy
Director



Prof Jayne Noyes
Chair



Dr Alisha Davies
Deputy Director



Prof Ronan Lyons
Executive Board



Prof Mark Bellis
Executive Board



Prof Ernest Choy
Executive Board



Prof Alan Watkins
Executive Board



Dr Richard Fry
Executive Board



Dr Mohamed Mhereeg
Research Officer/
Data Scientist



Amrita Bandyopadhyay
Researcher



Dr Roxanne Cooksey
Research Officer



Lois Griffiths
Researcher
Officer



Dr Michaela James
Research Officer



Dr Jonathan Kennedy
Data Analyst



Hope Jones
Researcher



Dr Tash Kennedy
Research Officer/
Data Scientist



Sarah Peddle
Patient & Public
Involvement Chair



Solmaz Safari
Patient & Public
Involvement



Dr Helen Davies
Patient & Public
Involvement



Dr Rachael Hunter
Patient & Public
Involvement



Becky Amos
Healthy
Development -
Early Years ACEs



Sam Dredge
Centre Manager



David Burdett
Research
Infrastructure
Support Assistant



Sarah Toomey
Communications
Officer



Katherine Woolley
Senior Public
Health Research
Officer



The Centre has continued to build on research that begins before birth. This research aims to understand the impact of pregnancy on mothers and fathers, the first 1000 days of a child's life, and it's the continued impact into teenage years and early adulthood.

Research Case Study Born In Wales Research Cohort.

The Born in Wales birth cohort which links data of all births in Wales (30,000 per year approximately) has continued to grow. Collecting information through an enhanced survey, parents were asked their experiences of pregnancy and the access to help and support they felt they had. Using the responses, research has now been published highlighting the effect of depression before or after pregnancy. Results identified that depression in fathers is as serious a factor as depression in mothers in relation to the long-term effect on the baby. These findings suggested that both mothers and fathers with depression need help and treatment until remission of depression.

The impact of the COVID-19 pandemic on mothers was evaluated. Results identified that although new mums found it very lonely and stressful to have a baby

during COVID-19, birth outcomes (preterm, full term, late born, or complications) were the same as previous years, thus COVID-19 did not adversely affect the birth of babies in Wales.

Further research published on the COVID-19 vaccination uptake found that 1 in 3 mothers report they would not have the vaccination in pregnancy. Vaccine data indicated that 2 in 3 did not have the vaccine in pregnancy but waited until after the baby was born; this is higher in younger mothers and those living in more deprived areas. The Centre is working on the MumPredict study with researchers from Northern Ireland, Scotland, and England. This collaboration is assessing the impact of health conditions such as asthma and epilepsy in pregnancy; other electronic cohort studies in the UK are being utilised to compare and contrast findings in different regions.

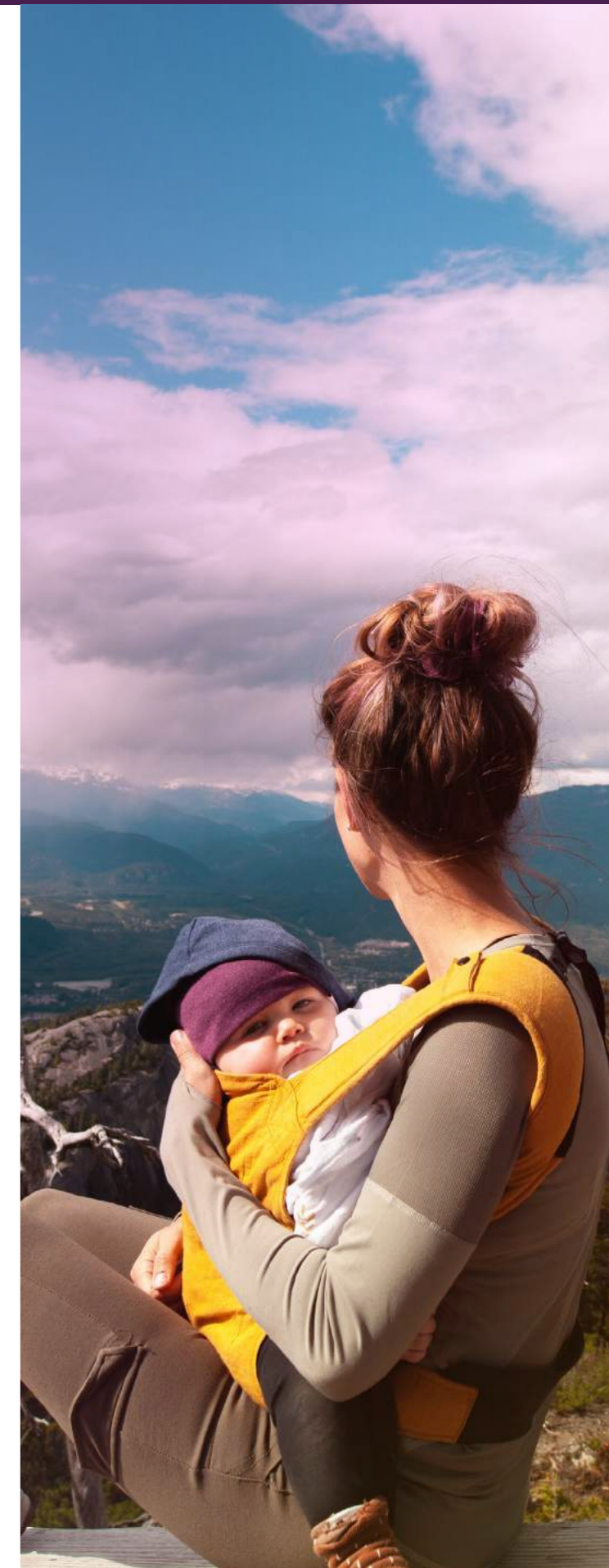
Individuals within the Centre are members of a research group led by Bristol University; this group comprises of researchers investigating the longer-term effects of COVID-19 and lockdown on families and in pregnancy. This collaboration encompasses individuals from London, Edinburgh, and the Office for National Statistics. The Centre is also a member of a group developing a maternal and infant hub within HDRUK; the goal of which is to strengthen expertise and access to data, subsequently improving health for expectant parents and their unborn infants.

Research Case Study August born babies are more likely to be diagnosed with ADHD if they start school in August, but not if they start school later.

Previous studies suggest an association between age within a school year and a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD). Scotland and Wales have different school entry cut-off dates (six months apart) and policies on holding back children.

The research aimed to investigate the association between relative age when starting school and treated ADHD in two countries, accounting for held-back children. It examined education and health records of 1,063,256 primary and secondary school children in Scotland (2009-2013) and Wales (2009-2016); observing that in Wales ADHD increased with decreasing age, e.g., the youngest children in the class were more likely to be diagnosed and treated for ADHD.

However, in Scotland, there was no difference in ADHD diagnosis rates between the youngest and oldest children. More children were held back in Scotland (7.66% in Scotland) than Wales (0.78% in Wales). Held-back children were more likely to be the youngest children in their expected year. This study suggests that in Wales the youngest children in the school year are more likely to be treated for ADHD, proposing that immaturity may influence diagnosis. However, these children are more likely to be held back in countries that permit flexibility, and this reduces the chance they will be given a diagnosis of ADHD.





Collaboration Case Study Working with Play Wales to understand Child well-being through COVID-19.

Collaborating with colleagues from the children's charity Play Wales, the Centre surveyed more than 6,000 young people in Wales aged eight to 25 years old from the school setting to higher education (including postgraduate students) between September 2020 and February 2021. The aim was to explore what young people felt had affected their well-being during the pandemic; results indicated that social interaction and mental health support were of particular importance.

Protect play.

The younger children surveyed showed concerns around Coronavirus. They told us that they wanted "for the virus to go away", and for "no more COVID rules". For these younger children, social play was a key source of well-being. Those who said they often played alone also reported higher emotional difficulties during lockdown. The children told us that they wanted to "be with my friends more" and be "able to play places I want to with my friends".

Bolster mental health.

The responses from participants aged 11 to 15 suggested that better communication about online learning, exams, and mental health would have supported their well-being during school closures.

Young people felt that they had not been given enough communication about how to access mental health support during the pandemic. This suggests that now students are back in the classroom, the provision of mental health resources in schools, as well as information on how to access available services, could assist young people find the help they may have lacked during school closures.

This is especially important for girls, who were more likely to experience poorer mental health than boys. This gender gap increases as young people age. One girl told us: "the worsened depression and heightened anxiety caused by coronavirus has almost pushed me to drop out of sixth form".

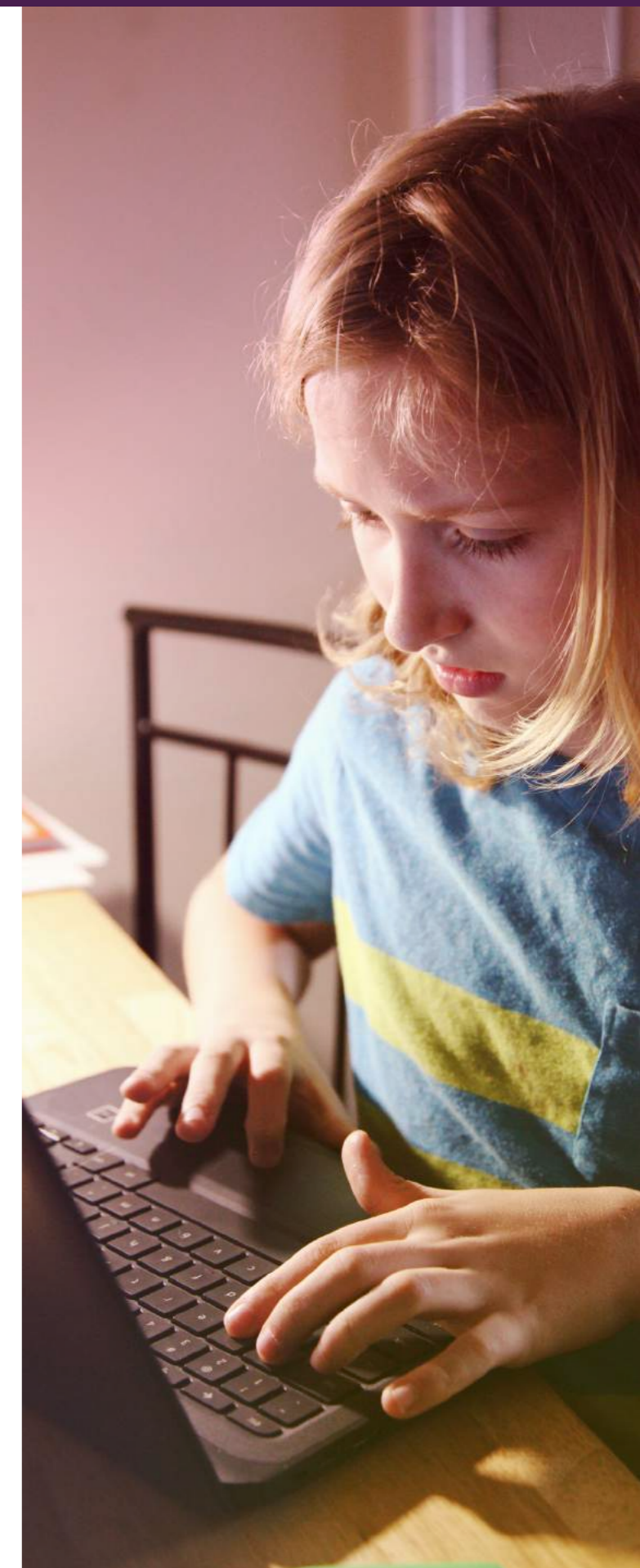
Secondary school pupils were particularly concerned about assessment and worried that they were falling behind in their education. One respondent to our survey

explained their concerns as follows

"Exam cancellation, predicted grades changed, stress of university choices without having to visit them. Unsure of my future in education".

Participants reported that they felt they had been left in the dark about changing assessment requirements during the pandemic. Online learning was a cause of anxiety for many secondary school pupils. As lockdown prompted a move to more independent learning and away from teacher-led classes, this may have proved difficult for young people at a time of uncertainty, particularly those in exam years.

However, some survey participants told us that they were able to learn better at home and at their own pace. While it is important to learn from the negative impacts the pandemic has had, such positives are also instructive. Children and young people must be listened to. Protecting play, socialisation, and opportunities to be active, as well as prioritising mental health support, is vital and should be essential to any COVID-19 recovery plans.





Research Case Study

Exploring the effects of the COVID-19 pandemic on the mental health of shielded children living in shielded households in Wales.

The COVID-19 pandemic has had a damaging effect on children's mental health. Argued also is that the strict public health restrictions potentially have been particularly damaging for vulnerable shielded children's mental health. However, there is a lack of studies examining mental health outcomes in these children.

This study led by Public Health Wales and supported by the Centre aimed to understand the impact of public health restrictions on shielded children, or those living with a shielded person. The research team linked the COVID-19 Shielded Patient List to demographic and healthcare datasets within the Secure Anonymised Information Linkage (SAIL) database. The study consisted of data from children aged two to 17 years old living in Wales and registered with a general practitioner.

Findings indicated a decrease in diagnoses or prescriptions for anxiety or depression during COVID-19, partly attributed to a reluctance to seek healthcare during this time. The prevalence of anxiety or depression was highest in shielded children, and the rate of new diagnoses or prescriptions during COVID-19 was significantly higher among shielded children. Future research could involve a longitudinal follow-up of these children to assess future trends in

healthcare use for mental health-related conditions and longer-term health and education outcomes among these groups.

Collaboration Case Study

VISION (Violence, Health and Society) Consortium.

Public Health Wales representing the Centre has been awarded a £7.1 million UKPRP grant as part of a five-year (2021-2026) collaborative project.

This project, called Vision (The Violence, Health, and Society Consortium), comprises of researchers from City University of London, King's College London, Lancaster University, University of Bristol, and University of Warwick, as well as encompassing members from several public bodies and third sector organisations.

Vision seeks to reduce the harms to health caused by violence by improving the data that underpin theory, policy, and professional practice. In particular, the project aims to improve the integration, management, and analysis of violence and health datasets, subsequently adding to the global evidence base on the measurement of violence and health. It will investigate the effectiveness of interventions to reduce violence and, consequently, reduce harms to health and health inequalities. The Vision Consortium will:

1. Develop a theory of change of violence, health, and society by utilising a complex systems approach.
2. Improve measurement by applying and developing a measurement framework for violence and abuse. Thus, enabling systemwide collaboration across disciplines and practitioner communities, and overcoming existing fragmentation.
3. Integrate and link data from multiple sources.
4. Investigate causal pathways between violence, health, and society, including those associated with inequalities including gender.
5. Evaluate the cost-effectiveness of intervention systems.

Collaboration Case Study

Unlocking data for public benefit.

The unlocking data for public health benefit study was funded by NIHR and combined the Police forces of Wales, Violence Prevention Unit, Public Health Wales, the Crime and Security Institute in Cardiff University, Administrative Data Research Centre, Population Data Science, and SAIL to improve

access to shared data across organisations.

The study linked domestic violence data with GP data, hospital data, and Accident and Emergency (A&E) admissions data. Data science methods were utilised to code text data, furthermore, interviews with all forces and those involved in preventing domestic violence were undertaken. Results indicated that people present to A&E numerous times before a domestic violence incidence is recorded by the police; the more domestic violence incidences recorded, the more likely the person is to have a subsequent emergency hospital admission or death. These findings have resulted in another successful grant awarded by NIHR to evaluate an intervention in A&E to reduce reoffending by the domestic violence perpetrator; this intervention improves access to mental health and substance abuse services.

The main conclusion from this research was that the real barrier to data sharing between organisations is a need to agree what data is appropriate to share, rather than physical barriers in sharing data.





This year the Centre has continued to focus on the health and environmental challenges people are facing. The ongoing impact of COVID-19 has continued to direct the patterns of people's work and home life.

This impact has been assessed in schools, looking at how mitigation measures have affected school staff well-being. Also evaluated was the impact of working from home, exploring the health impacts and inequities of the new way of working.

Finally, working collaboratively, our research focusing on persistent and chronic pain research has resulted in the Centre evaluating this impact at a UK level.

Research Case Study

COVID-19 mitigation measures in primary schools and association with infection and school staff well-being: an observational survey linked with routine data in Wales, UK.

School-based COVID-19 mitigation strategies have greatly impacted the primary school day (children aged 3-11) including: wearing face coverings, 2-metre distancing, no mixing of children, and no breakfast clubs or extra-curricular activities.

The Centre supported researchers to deliver a school staff survey capturing self-reported COVID-19 mitigation measures in the school, participant anxiety and depression, and open-text responses

regarding experiences of teaching and implementing measures. These survey responses were linked to national-scale COVID-19 test results data to examine association of measures in the school and the likelihood of a positive (staff or pupil) COVID-19 case in the school. Linkage was conducted through the SAIL (Secure Anonymised Information Linkage) Databank. Responses were obtained from 353 participants from 59 primary schools within 15 of 22 local authorities. Having more direct non-household contacts was associated with a higher likelihood of a COVID-19 positive case in the school, and a trend to more self-reported cold symptoms. Staff face covering was not associated with a lower odds of school COVID-19 cases (mask vs. no covering) and was associated with higher self-reported cold symptoms.

School staff reported the impacts of wearing face coverings on teaching, including having to stand

closer to pupils and raise their voices to be heard. Results indicated that 67.1% of teachers were not able to implement 2-metre social distancing from pupils. We did not find evidence that maintaining a 2-metre distance was associated with lower rates of COVID-19 in the school.

Implementing, adhering to, and evaluating COVID-19 mitigation guidelines is challenging in primary school settings. The findings suggested that reducing non-household direct contacts lowers infection rates. There was no evidence that face coverings, 2-metre social distancing, or stopping children mixing was associated with lower odds of COVID-19 or cold infection rates in the school.

Primary school staff found teaching challenging during COVID-19 restrictions, especially for younger learners and those with additional learning needs.

Research Case Study

Working from home - exploring the health impacts and inequalities of the new way of working.

Researchers from the Centre working at Public Health Wales supported the delivery of a nationally representative household survey across Wales (Public Health Wales' COVID-19, Employment and Health in Wales study). In this survey, cross sectional data on homeworking was collected from 615 employed working-age adults in Wales (63.7% female, 32.7% male aged 50-59).

Respondents were questioned on their ability to work from home, their perceptions of its impact on their health, and their preferences for time spent homeworking in future. The findings from the survey identified that over 50% were able to work from home. However, some groups were less likely to be able to participate in homeworking, including those: living in the most deprived areas, in atypical employment, experiencing financial insecurity, and with limiting pre-existing health conditions.

Over 50% showed a preference towards homeworking to some capacity, with 40% wanting a hybrid approach, splitting their time between the home and an office/base. Over a third wished to work from home at least half the time.

- Some groups were more reluctant to engage in a wider shift to homeworking.
- People aged 30-39 were less likely to want to work from home full-time.
- Those who lived alone and those living in the most deprived areas were more likely to want to avoid homeworking entirely.

The inequity in the ability to work from home reflects underlying inequalities in Wales; those facing the greatest insecurity (e.g. those living in most deprived areas, those with more precarious work or financial circumstances, and those facing health challenges) being less able to participate in homeworking. Working from home offers greater flexibility, reduces the financial and time costs associated with commuting, and protects individuals from exposure to communicable diseases. However, working from home presents an enormous challenge to preserving the mental well-being of the workforce, over 40% of respondents indicated that it worsened their mental well-being and loneliness, particularly for younger individuals and those with low mental well-being. Younger respondents and those in poorer health who could work from home were also more likely to engage in health-harming behaviours and reduce their engagement in health-protective behaviours such as eating well and moving more. Reflecting on the future, providing pathways for accessing work from home arrangements, integrating hybrid models, and preparing targeted health support for at risk groups may be best suited to the working population's preferences and needs.

Research Case Study

Good work in the COVID-19 recovery priorities and changes for the future.

The Centre supported research delivered by Public Health Wales investigating the COVID-19 response

and recovery priorities. This study was undertaken using a sample of working adults residing in Wales to develop insights into the workforce's priorities for future work and the employment changes they have considered making since the COVID-19 pandemic. Data was collected in a household survey across Wales between May to June 2020 and December 2020 to January 2021.

Findings from the study identified that:

- Work priorities remained largely stable throughout the pandemic. However, the desire to work close to home increased as the pandemic progressed.
- Those in poorer health prioritised flexibility and were more likely to consider retiring than their healthier counterparts.
- Those with limiting pre-existing health conditions or low mental well-being were more likely to consider becoming self-employed.
- Over 20% of the total sample had considered retraining. Those with low mental well-being, younger individuals, and those experiencing financial insecurity were more likely to consider doing so.
- Furloughed individuals were more likely to consider retraining, becoming self-employed, securing permanent employment, and compressing their working hours.

Most Welsh working-age adults want to work close to home, with this becoming increasingly true

further into the pandemic. Population subgroups that are prone to facing insecurity during their working lives (furloughed individuals, those experiencing financial insecurity, those in ill-health) were more likely to consider changing their employment conditions. The changes they considered may reflect a desire to increase the autonomy, flexibility, and stability that their work offers.

This research recommended that action is required to ensure that work that is good for health is equally accessible for all.

Research Case Study COVID-19 in Inflammatory Arthritis.

Researchers from the Centre compared the incidence and mortality of COVID-19 in people with inflammatory arthritis to the general population. This cohort encompassed the entire nation of Wales, thus providing complete COVID-19 test data for the population of 3 million individuals. Analysis controlled for shielding status, comorbidities, history of serious infections, previous hospitalisation, medications used to treat inflammatory arthritis, and susceptibility to severe outcomes of COVID-19.

This was the first study to include individuals shielding status in analysis; utilising data for an entire population that uses linked, routinely collected health data from multiple health sources. The study concluded that inflammatory arthritis was not associated with increased mortality following COVID-19 infection.

However, being vulnerable (shielded), having other conditions, and previous history of serious infection or hospitalisation were associated with increased risk mortality. These key risk factors can identify individuals with inflammatory arthritis at greater risk from COVID-19 and advised to shield. Refining the criteria for shielding will reduce the negative impact of shielding.

Collaboration Case Study Chronic Pain consortium.

The Centre is collaborating with the Universities of Aberdeen, Oxford, Southampton, and Michigan to design a better treatment pathway for patients with fibromyalgia. In addition, the Centre is part of a £3.8 million project focusing on the psychosocial aspect of chronic pain; this includes collaborations with researchers from the Universities of Bath, Bristol, Keele, Royal Holloway, University College London, and the University of the West of England. They will study the psychological and social factors that influence people's experience of pain.

The Centre also supports the Persistent Pain Registry, which takes advantage of the Health and Care Research Wales funded Healthwise Wales Study and the SAIL Databank to facilitate recruitment and long-term follow up. It will use cutting edge methods in assessing chronic pain to examine how psychosocial factors affect pain experience.

Collaboration Case Study Covid-19 Longitudinal Health and Wellbeing National Core Study programme.

The Centre is part of the UKRI funded Longitudinal Health and Wellbeing National Core Study; which aims to understand the health, social, and economic impacts of the COVID-19 pandemic by uniting national anonymised electronic health records to inform policy. The study has a collaborative team including UCL (project lead) and the Universities of Oxford, Bristol, Edinburgh,

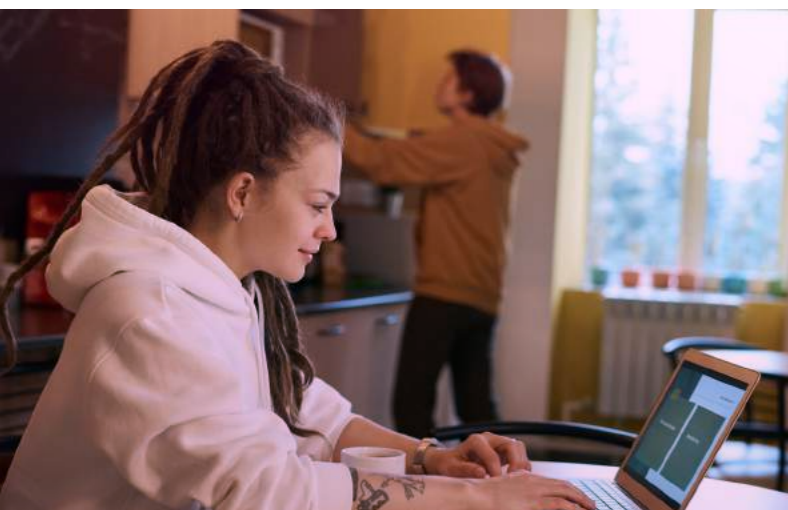
Glasgow, Cambridge, York, West of England, King's College London, the London School for Hygiene and Tropical Medicine, Bradford Institute for Health Research, and the National Institute for Health and Care Excellence (NICE).

Subsequently, the Centre is involved in a 4-nation paper examining healthcare disruption, examining the long-term healthcare use attributable to COVID-19 in Wales, collaborating with co-authors in Glasgow and University College London. In addition, we are working with partners using OpenSafely (England) and EVEII (Scotland) to examine the impact of COVID-19 on children and young people, this work has been funded by HDRUK. The work of this partnership will continue for this year with a focus on the healthcare disruption as COVID-19 restrictions lessen, as well as possible implications of higher rates of certain autoimmune conditions due to a COVID-19 infection.

Research Case Study Con-Cov Cohort.

Con-Cov is a total population electronic cohort for Wales with 3,466,217 people. The analysis of this cohort has been utilised to inform policy developments and decisions both for Welsh Government and for SAGE. The analysis undertaken has included examining risk of infections, hospitalisations, and mortality, with specific attention at the influence of ethnicity, occupation (e.g. Health Care workers), those living in care homes, and for pupils and school staff. The work also has included mapping the progress of the pandemic and disease transmission in order to help inform mitigation measures.

The work with this dataset will continue by observing the effectiveness of vaccinations and the impact of COVID-19 on longer-term development of cardiac conditions and autoimmune conditions. This platform has also been used by other groups such as the Administrative Data Research Centre in Wales, the QCOVID risk stratification development group, and the National Core Studies groups.



Patient and Public Involvement

Patient and Public Involvement (PPI) continues to play an important part of the Centre's work. This year the focus has been undertaking a review of reviews providing evidence of good practice in PPI for both population health and health research. This review set out to examine how PPI can be undertaken to ensure it benefits the patients, public, and the researcher.

The research led by Bangor University undertook this by evaluating the evidence from published reviews, assessing it against the UK Standards for Public Involvement, and examining the challenges faced by those undertaking PPI. The researchers identified 31 reviews of published studies across population health research that demonstrated good examples of PPI. Challenges identified were noted below:

Duration. Population health research often looks at health variables over a long time - making recruiting and retaining suitable PPI representation across the length of the project more challenging.

Evidence for Good Practice in Public and Patient Involvement in Population Health and Health Research

REPORT



Complexity. The many variants and complexities involved in public health research can be complex for a layperson to understand.

Representation. Population health research addresses large and diverse population groups; it is challenging to achieve true representation, with representation becoming particularly difficult with certain under-represented demographic groups.

Main findings

- There is a lack of research and clarity around governance (standards of good practice) and impact (the effect research has on people and society).
- There is little knowledge around PPI with under-represented groups.
- There are gaps in knowledge for PPI team members, particularly around managing the complexity of data research.

The report provided a series of recommended actions to address PPI in Population Health Research.

Representation

- Use a variety of methods and partners to recruit a range of PPI members with different knowledge, skills, and experience at relevant points in the project lifecycle.
- To fit better with the wider community context, include relevant stakeholders and agencies, as well as clinicians, charities, specialist support services, plus patient and advocacy groups. Those undertaking PPI should aim to be proactive, getting involved with the community to build more meaningful relationships with the target population.

Complexity

Allow for the formal development of knowledge and skills; supporting PPI team members to be informed helping to make informed decisions, as well as developing the understanding of specific parts of the research process and/or context.

- Make learning relevant to the specific context of the research and at the appropriate level for the PPI team member to allow full participation and to build participant capacity.
- Provide training in research components to give PPI team members confidence in their involvement and to explain 'rules' and constraints of research.
- Use a variety of methods such as supervision, mentoring, formal training, workshops, and team-based sessions, include everyone on the team if possible.
- Additional key components regarding the typically longer duration of population health projects are:
- Communication – clear, accessible, and timely communications using different methods as appropriate.

- Governance – clarity of roles and structures to support the project throughout its life
- Relationship building – take time to build strong, meaningful relationships to improve PPI retention and understanding.
- Resources – ensure sufficient time, financial, and practical resources are available for the duration of the project including lead in and post-project activity.
- Staff continuity – mitigating for changes in personnel, whether principal investigator, key researchers, or PPI members.
- Flexibility – recognising that projects and external drivers do need to adapt to changes in a measured and managed way.
- Continuous evaluation and feedback – particularly important in longer projects to ensure that everything stays on track and to ensure that any issues are identified sufficiently early to allow change.

The aim for the report now is to circulate to those that have undertaken PPI, so that it can be used as a tool in which to support their PPI activity.





Capacity building is central to the Centre's aim to support and encourage the next generation of researchers in Wales. This is achieved by providing a pathway that begins by offering internships, progressing through to supporting master's students, PhD's, and fellowships.

Internship opportunities

This year the Centre has provided two internships which were supported by the charity Play Wales. One intern, a graduate computer scientist, worked with young people to design a free app which empowers children and adolescents to provide feedback on play areas and access to local activities. This intern progressed to undertake a master's degree in this field. This research is being developed by a second internship, working with local champions to map areas and collaborating with the council, police, play sufficiency workers, and others to create local child informed change. Another internship has provided a postgraduate population medicine student with the opportunity to utilise qualitative responses from children regarding the impact of COVID-19 on the ability to play and how best to recover (for children) from COVID-19.

This work was extended by the National Core Studies group and is now being written up to give the intern their first paper. This intern has now progressed to a postgraduate medicine course. Both internships were mentored by the Centre research officer Dr Michela James; this experience

provided an early career postdoctoral researcher with experience in managing and supporting a team.

MSc training

The Centre's master's students have undertaken the pilot work to inform new grant development. For example, linking Police and health data, working with Public Health Wales to understand the datasets to predict children who are taken into care (from pregnancy datasets), responding to questions from the All-Wales Toxicology Group on medications in COVID-19, and exploring multimorbidity in pregnancy with a view to the outcomes for the child. These students have progressed to employment in the NHS and in Swansea Data Science.

PhD student mentorship

Three PhD students from the Centre have graduated, one is awaiting her Viva. These students all achieved their PhD in a lockdown situation. The areas of research covered include investigating whether the delay in autism diagnosis can be reduced by using online rather

than face-to-face methods, how to improve physical activity levels for young people, and how to better use health data by sharing code and making analysis easier to replicate and repeat. We have 4 new PhD students starting with the Centre this year, these projects will be; designing the Multiple Sclerosis (MS) platform with the MS Society, working with children exposed to Adverse Childhood Events (in partnership with Public Health Wales), understanding what works to protect vulnerable children, and working with women in pregnancy who are overweight or obese.

Fellowships

Dr Tim Pickles (early career researcher representative on the Centre Exec) was successful in a NIHR doctoral research fellowship assessing whether patients with rheumatoid arthritis were able to self-monitor their disease activity at home. This aligns with the key healthcare objective of the Welsh government to implement patient report outcomes (PROs) and develop digital healthcare in Wales. His vision is to implement this throughout Wales. Not only will this benefit patients and clinicians, but it also integrates clinical service with research. This will also enrich the data available in the SAIL Databank.

Dr Emily Marchant was supported by the Centre in successfully achieving an ESRC fellowship to work internationally with others on health and well-being in primary school children. She has now been employed by the Education Department as a Lecturer in Swansea University to expand and continue this work. Amrita Bandyopadhyay has submitted an ESRC fellowship application for analysis of court, prison, and propagation data, which is established on her work in the Centre tackling domestic violence employing routine data.



Dissemination

Communicating our Research to a Broad Audience

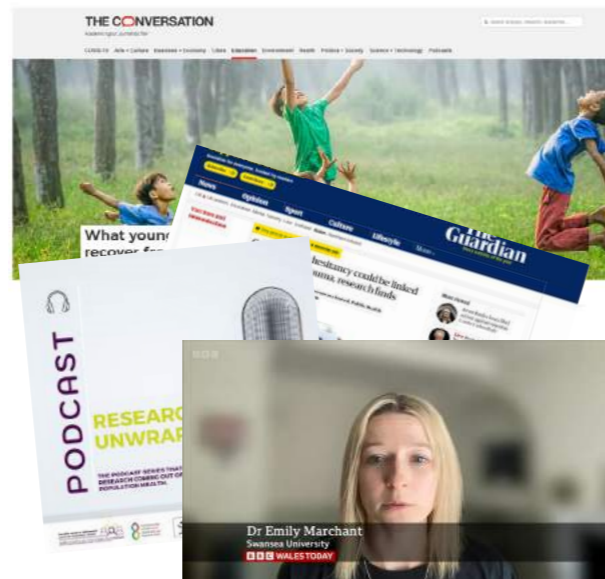
At the Centre, we aim to extend our influence and widen the impact of our research by creating relatable and shareable content – using this content to inform policy, practice, and encourage positive change. From 2021 to 2022, the Centre experimented with new ways of presenting our research, including podcasts.



Highlights and successes

2021 to 2022 saw increased content and engagement across our website and social media platforms.

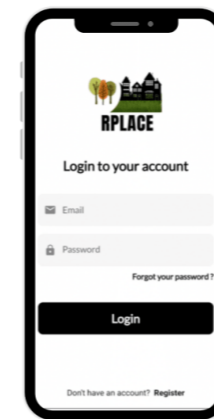
- 9 press releases with local and national press coverage, including The Guardian and The Independent.
- 2 TV interviews, including an interview on BBC Wales News.
- 31 website articles and case studies.
- 7,861 new users on our website.
- 33% increase in new followers on Twitter.
- Facebook reach increased up to 54,906.
- 10 new YouTube videos.



Using Social Media to Recruit Participants for Research

The Centre also used social media platforms to recruit public members to participate in our research projects. Recruitment campaigns incorporated feedback from focus groups to ensure messages, tone, and imagery were relevant. Campaigns included:

- RPlace - is a new campaign to promote a mobile app developed by the team. The app allows young people to review their local area - empowering them and advocating their needs.
- RHEUmatic and musculoskeletal conditions: geographical MApping of Prevalence and outcomeS (RHEUMAPS) - This survey aimed to understand the healthcare priorities of those living with rheumatic and musculoskeletal conditions and how these might differ in rural and urban communities.



Highlights and Successes

The online campaign for Born in Wales has recruited over 1000 participants from communities across Wales.

The campaign was designed to target and engage with various audiences, including- expectant and new mums and dads, LGBTQ+, and midwives.



Top media Tweet earned 3,185 impressions

What has it been like for pregnant mums during #Covid? Find out more about the #BornInWales our survey
[nphwr.org.uk/portfolio/born...](https://nphwr.org.uk/portfolio/born-in-wales)
[@maternalmatters](https://twitter.com/maternalmatters) [@PMHPUK](https://twitter.com/PMHPUK)
[@ChildreninWales](https://twitter.com/ChildreninWales) [@ResearchWales](https://twitter.com/ResearchWales)
[@PublicHealthW](https://twitter.com/PublicHealthW)
pic.twitter.com/qQeA3iDcUw



International Collaboration

Facilitating International Research Collaboration and Knowledge Sharing

In February the National Centre for Population Health & Wellbeing Research hosted researchers from around the world at the International Collaboration Conference on Population Health and Wellbeing Research 2022.

The Conference, attended by over 250 delegates from 20 countries, provided an opportunity to share information, develop collaborations, and facilitate cross-nation research.

A vital aim was to explore common global health challenges, strengthen worldwide communication and collaboration to tackle health and well-being challenges, reduce inequalities, and build more robust and resilient populations.

The programme focused on population health with dedicated streams ranging from maternal and child health to schools and education, natural experiment evaluation, healthy ageing, chronic conditions, and morbidity. **Presentations are found on:** <https://youtu.be/oGL-WVdGatk> and <https://youtu.be/oF2vEgVlcdA>.

The Conference offered an excellent opportunity to learn from the latest research and practice, network with leading academics and researchers, and work with others to develop grants and papers.

Impact Highlights

- Supported early career researchers on a global level
- 48 abstracts submitted from early career researchers from across the globe.
- 14 researchers had their abstracts published in a special issue of the International Journal of Population Data Science.
- Post conference collaboration facilitated in regular virtual cafés -the café's offer researchers the opportunity to continue to meet others worldwide to discuss collaborative research opportunities, link and share knowledge and ideas.
- Initiating international Research Grants

Overall, the aim of the Conference was to position Wales at the forefront of international population health research collaboration; 2 international grants are under development built on these collaborations with partners in Africa (Kenya and Nigeria) and Brazil (Medical Research Council). The aim of which is to understand what works to improve child well-being in different nations, and partnering with researchers in France, USA, and Germany (Wellcome Trust) to look at monitoring and reducing child abuse on an international scale.

Building on the success of the Conference we aim to deliver another International Conference next year to continue to facilitate opportunities to collaborate on international stage.



Professor Majid Ezzati
MRC Centre for Environment and Health

Non-Communicable Disease Risk Factors

- Global network of ~1,500 scientists/practitioners
- Pool and analyse population-based data on NCDs conditions
- Rigorous and systematic assessment of representativeness (~3,400 measurement studies with over 200 million people)
- Country results and visualisations at www.ncd-riskenvironment.org

Characterising worldwide patterns and transitions in cardiometabolic conditions. International Collaboration Conference on Population Health and Wellbeing Research 2022

Professor Hayley Christian
University of Western Australia

Where you live

The proximity of your house to transport links, ... and the provision of public amenities and schools, can critically impact child health.

The influence of the built environment on child health: Australian research. International Collaboration Conference on Population Health and Wellbeing Research 2022

Professor Kevin Dadaczynski
Public Health Centre Fulda of Fulda University of Applied Science

Health Literacy

Disparities in digital health literacy

Low digital health literacy stratified by subjective SES (N=490)

Task	low SSS	middle SSS	high SSS
search and find	~60%	~45%	~35%
adding content	~55%	~35%	~25%
evaluating reliability	~45%	~40%	~30%

Improving the health and wellbeing of mothers and fathers-to-be, and their children. International Collaboration Conference on Population Health and Wellbeing Research 2022

Dr John Allotey
WHO Centre for Global Women's Health

Our impact

- Global & National guidelines
- NICE guideline review - Use of Progesterone for miscarriage
- Guidance for maternal medicine services in the post-pandemic era (COVID-19 pandemic)
- Parliamentary Minister for Strategy, WHO COVID-19 group, Birmingham COVID-19 group, NICE guidelines
- Media

Improving the health and wellbeing of mothers and fathers-to-be, and their children. International Collaboration Conference on Population Health and Wellbeing Research 2022

Conclusion and Going Forward.

In the coming year the Centre will be building on collaborations developed through the International Population Health conference, especially with grants lead by our Research Fellows and Early Career Researchers.

We are building on our work in violence prevention by evaluating the effectiveness of the interventions in A&E at preventing future escalation of violence. We will be working with young people on what they feel works to support them during difficult times and helping to build interventions which are informed and lead by young people.

We will continue our work with families in Born In Wales moving our focus to work with fathers and families with children aged 18-36 months, looking at what helps children be confident and happy.

We will still be focusing on understanding the long term impact of COVID-19 for young people, changes in the work places, and for those with inflammatory diseases.

With the return to face-to-face meeting we are looking forward to once again meeting with others to discuss future directions, our research findings and understanding how we can best work together for improving population health in Wales and beyond.





Ymchwil Iechyd
a Gofal **Cymru**
Health and Care
Research **Wales**



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