

Institution: Bournemouth University

Unit of Assessment: 3 – Allied Health Professions, Dentistry, Nursing and Pharmacy

1. Unit context and structure, research and impact strategy

Context and structure

Health research at Bournemouth University (BU) is driven by a commitment to improve the lives of people and their communities. Putting the patient/user at the heart of our research ensures that we produce world class research that is relevant and meaningful. UoA3 has been a core part of BU since RAE 2001, comprising researchers largely, but not solely, from the Faculty of Health & Social Sciences (FHSS). Our submission reflects our multidisciplinary and interdisciplinary approach developed since RAE 2008 and highlighted in REF 2014. We have seen an exponential growth in research-active staff and subsequent impact-led applied research, between REF 2014 and REF 2021 as well as a much greater focus on societal impact from the research we conduct.

In 2014 we submitted a mixture of health and social science researchers, in total 21.40 FTE BU staff, to UoA3. Due to the growth in both quantity and quality of health and social science research at BU, we are making separate submissions to both UoA20 and UoA3 for the first time in REF 2021. This separation has required us to refocus and, subsequently, refine the research strategy devised in REF 2014.

Our UoA3 submission now comprises nearly a hundred academics (FTE submission of 77.3) from over 15 different academic disciplines, including: allied health professions, forensic science, general practice, health psychology, health service research, midwifery, nursing, nutrition, orthopaedics, public health, physiology, physiotherapy, sociology of health & illness and statistics. Many academics collaborate in applied and/or interdisciplinary national and international research, and/or with colleagues in the NHS, industry and charities/non-governmental organisations (NGOs). Academics in UoA3 contribute to, and often lead, interdisciplinary research groups (see Section 4 for example, Healthy Ageing Programme in Wessex [Murphy]).

UoA3 academics are largely spread across all FHSS departments (see REF 5a). These departments are administrative centres with research driven by seven interdisciplinary research groupings: (1) ADRC [Ageing & Dementia Research Centre]; (2) iWell [BU Integrative Wellbeing Research Centre]; (3) NLTH [Nursing for Long-Term Health]; (4) BUCRU [BU Clinical Research Unit]; (5) CMMPH [Centre for Midwifery, Maternal & Perinatal Health]; (6) IMIV [Institute of Medical Imaging & Visualisation] and (7) ORI [Orthopaedic Research Institute], as illustrated in Figure 1. The submission also includes a small number of staff outside of FHSS in areas such as Biological Science.

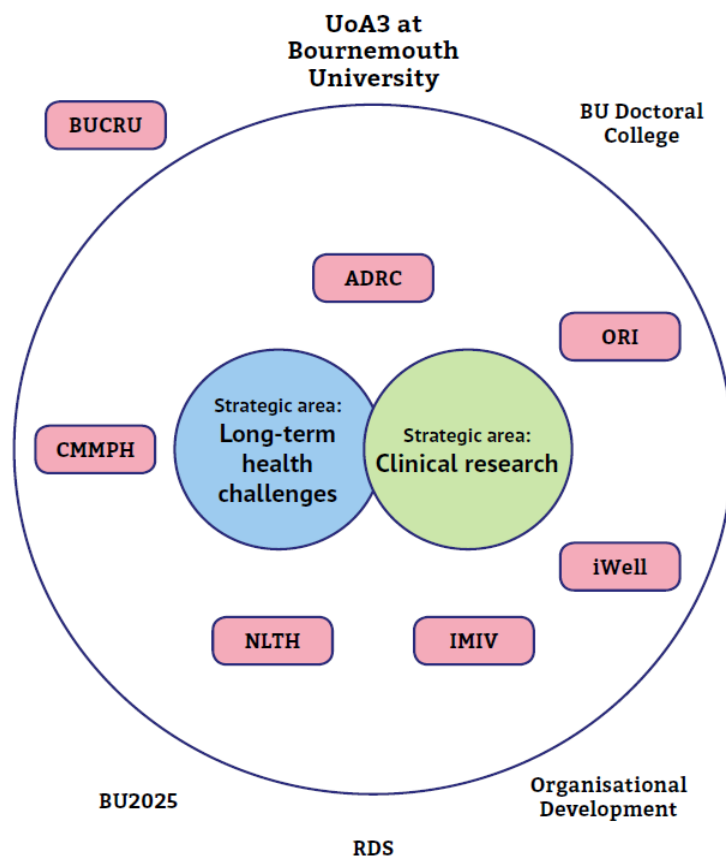


Figure 1. Overview Research in UoA 3

Research and impact strategy

During the first part of the REF 2021 period we followed the strategy set out in REF 2014. This earlier period was characterised by consolidation, appointments of key staff (new and replacements) and the identification of priority research areas. The REF 2014 strategy delivered a more streamlined and focused research organisation, enabling the establishment of most of the seven research units shown in Figure 1. From 2018 onwards our research has been driven by BU2025, our university's long-term strategy which 'fuses' research, education and professional practice, referred to as FUSION. The UoA has been a major beneficiary of strategic growth plans, particularly with regards to investment in medical science and assistive technology (two of the four strategic investment areas to enable interdisciplinary research growth). BU2025 has 'health & well-being' as one of its core five themes and this strategy encourages interdisciplinary research through multidisciplinary collaborations.

The focus of our research is on improving the health and well-being of people in different societies through influencing health systems, health workers, health policy and practice. The possible impact of any research is considered right from the design stage.

Medical science is a key strategic investment area for BU with an estimated 10% of the regional workforce employed in the health economy. BU's strategic investment in medical sciences (and this does not mean the specific lab-based discipline of Medical Science, but more generally 'Health and Health-related Research') enables us to build on a solid foundation of interdisciplinary health research across the wider university. BU's investment in this area focuses on several important areas of growth as well as local needs. Our health research groups include the newly formed university-wide Institute for Medical Imaging & Visualisation (Fig. 1). With £1.4m of financial investment from the Dorset Local Enterprise Partnership (LEP), IMIV has invested in MRI scanning to support world class imaging research and ultrasound facilities, housed in our recently commissioned, circa £47.5 million, faculty building.

This has led to the creation of new facilities to advance allied health research, most notably with the creation of state-of-the-art facilities in orthopaedics (ORI) and medical imaging (IMIV). This

has been accompanied by the appointment of ten new professors in the REF period, including joint appointments with the NHS to secure leading expertise and the creation of a partnership with the newly formed University Hospitals Dorset NHS Foundation Trust (see Section 2).

Research in UoA3 is organised through seven key research groupings (see Figure 1). The strategic aim for the next five years is to build our clinical research capacity to enhance our applied research portfolio. The UoA3 is currently collaborating with colleagues in all five NHS Trusts in Wessex, and partnered with University Hospitals Dorset (UHD) Trust and Dorset HealthCare University NHS Foundation Trust. We are working to develop a Clinical Trials Unit (CTU) and a central NHS research office to be hosted within the new Bournemouth Gateway Building opened in late 2020. The BU part of the CTU collaboration to support clinical research in Dorset is led by Nyman (submitted to UoA4). For the next REF period our strategic development, in line with the CTU, includes a focus on enhancing the clinical oversight in clinical trials for participant safety and facilitating regulatory inspections.

This strategic development also includes the development of a Dorset Biobank. BU has invested World Class Laboratory funding for the purchase of a DNA sequencer and cryobanking facilities. The BU lead is Zhang, a scientist based outside UoA3. This new facility will be used in interdisciplinary research between lab-based scientists and UoA3 researchers; at least one group of UoA3-based health researchers is currently using the genetic sample storage facilities at University of Cardiff Biobank (i.e. van Teijlingen).

Our unit supports an inclusive research culture and our overall approach is linked to and based on BU’s Fusion strategy (see REF 5a). In our REF 2014 Environment statement we outlined “Our four core strategic objectives for 2018 and beyond: (1) Enhancing our excellent national and international profile in research; (2) Increasing the quality of our bids for research income; (3) Enhancing our research capacity and environment further and (4) Continuing to grow our PhD population.” In the REF 2021 period we achieved all four of these strategic objectives. Key achievements include:

- 1) Nearly a four-fold increase of participants in this REF, from 21.4 FTEs (REF2014) to 77.3 FTEs (REF2021) – with a well-aligned staff profile to cross-disciplinary research.
- 2) Nearly a two-fold increase of postgraduate research (PGR) student completions, from 34 (REF2014) to 57.33 (REF2021). Increasing the average annual completion rate by 20%.
- 3) Nearly a three-fold increase in research income, from £2.8m (REF2014) to £7.6m (REF2021). Increasing the average annual income rate by 93%.

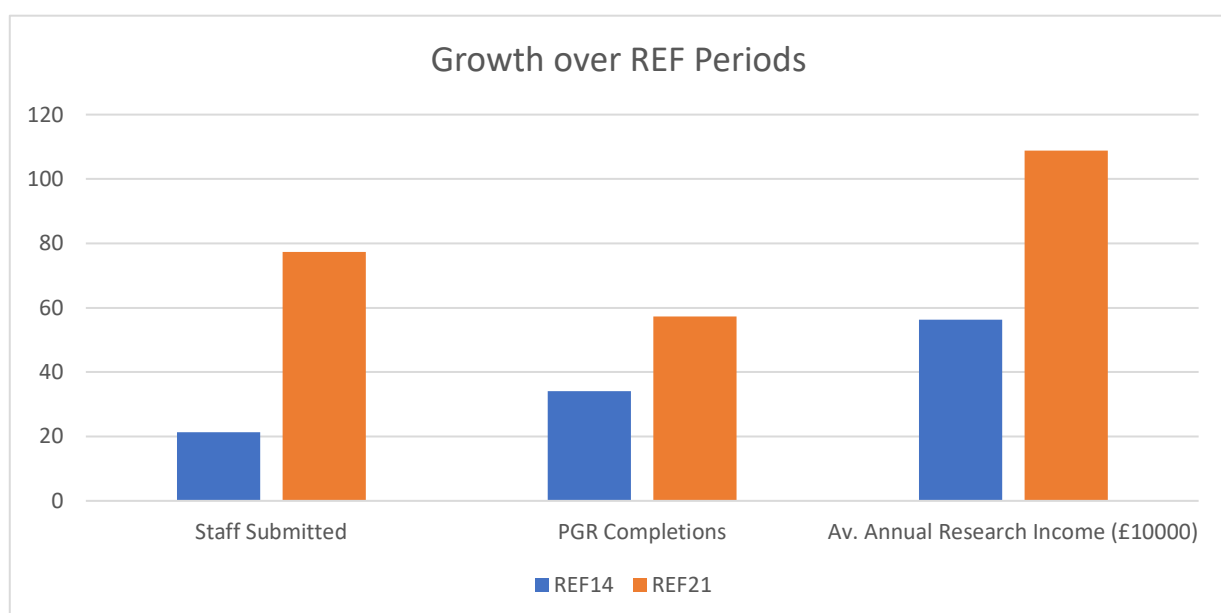


Figure 2. The UoA’s growth between the REF periods.

Refining the four core elements within the current UoA3 strategy has enabled clearer evaluation, as evidenced in the four objectives: (a) growth of high-quality publications; (b) increase international collaborative research; (c) improve PhD completion rates and (d) expand research impact. All four are underpinned by our dedication to promote interdisciplinary research and increase interdisciplinary collaborations.

Objective a. Growth of high-quality publications (as evidence of enhancing our profile)

Since REF2014 our annual number of published papers has been steadily increasing (Figure 3 shows publications all BU staff submitted in this UoA, measured on 20th Feb. 2021). Since 2014, UoA3 staff and associated category 'C' staff have published over 1,400 peer-reviewed papers which were in total cited > 17,000 times (measured SCOPUS 14 Jan 2021). The trend of increased annual output numbers has been stimulated by writing workshops, ECR mentorship, faculty-wide Writing Weeks three times a year (initiated at BU by UoA3 staff) and pairing people by research interest which helps to ensure that the quality of publications increases. FHSS has a strong mentoring and coaching culture. Mentoring is available for all staff and there is a central system that reviews and supports with resources such as the 'mentoring handbook' for mentors and mentees. Coaching is implemented through our management development programmes and from an external coaching bank which is offered as part of our developmental programmes, including transitions into role or 'stepping up' to new roles. There is also an internal coaching scheme which can be made available to interested participants.

There is writing support at university level through the BU Writing Academy as well as at faculty and departmental level. Over the REF period 40 ECRs (at least 33 female and 7 males) in our UoA 3 have benefited from participating in one of the annual BU-wide Writing Academies. The Writing Academy comprises external experts and staff who are taken to a local hotel for three days (away from the interruptions of their office), with follow-up support from the external experts and experienced BU mentors to help draft and submit a scientific paper.

Figure 3 shows the steady rise in annual research outputs in UoA 3. Our efforts to build research capacity supported this growth in outputs. At the end of the previous REF 2014 period a high proportion of our staff were PhD students themselves. With many staff members gaining their PhDs over the past years, the proportion of PhD students has gone down, which in turn increased the UoA's capacity to: (1) write for publication and (2) supervise external PhD candidates. BU has a university-wide REF Outputs Committee (see REF5a) which promotes Open Access and manages an Open Access fund (see Infrastructure below).

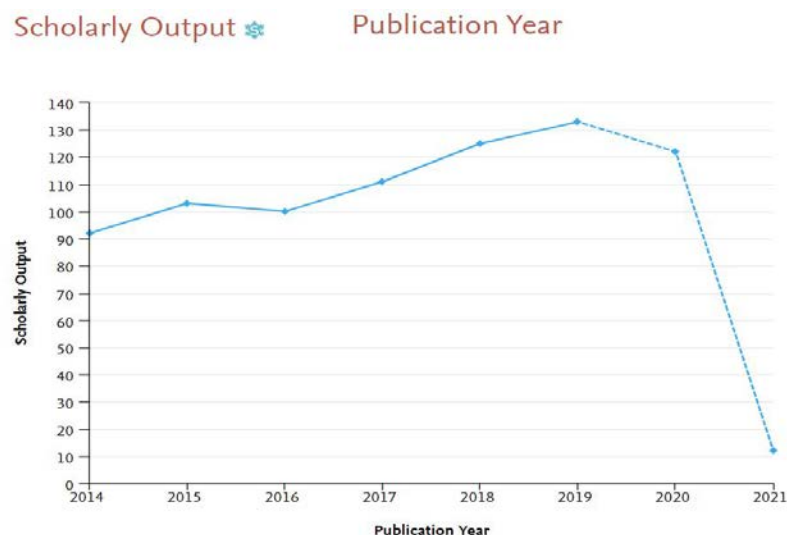


Figure 3. Annual increase research outputs by UoA3 staff (SciVal® database, Elsevier B.V., <http://www.scival.com> (downloaded 20.02.2021))

Objective b. International collaboration and research

We are dedicated to generating societal impact across the globe, supporting several countries to achieve the SDGs. The UoA3 encourages staff to develop international collaborations. BU established an International Priority Partner List in order to put its global effort into a limited number of strong academic partners. BU's Global Engagement Hub has helped to identify academics at priority partner institutions that BU academics can collaborate with on future research. There is recognition that research collaboration grows from established relationships and we foster these through teaching and placement relations and the support of our central and faculty global hub to broaden this to international research endeavours.

Over the past two REF periods UoA3's strategic aim has been to increase international research collaborations. This has been successful, for example, the SciVal Subject Classification for Nursing shows that BU had 207 co-authored publications in REF21 with key collaborating institutions in Continental Europe, North America and Australia/New Zealand.

Key geographical areas for BU health research are in Continental Europe (Hean, Heaslip, Hemingway, van Teijlingen, Tsofliou, Iannuzzi, Hundley, Cescutti-Butler, Murphy, Crossen-White, Trenoweth, Tee) and in Asia, especially Nepal, Malaysia, India & Afghanistan (Angell, Aryal, Arnold, Clarke, Hundley, Mahato, Milne [†2019], Regmi, Simkhada, Vijayakumaran, Taylor, van Teijlingen, Way, Wood).

A multidisciplinary example of our focus on Continental Europe is SAIL (Staying Active and Independent for Longer). SAIL is a three-year EU funded project that utilised a social innovation approach to develop ten pilot studies (two in the UK) which aimed to support active aging. The role of UoA 3 staff at BU (Hemingway & Crossen-White) was to undertake an evaluation of the pilots and develop subsequent feasibility. In South Asia this is demonstrated by our UoA 3 staff involvement in international development activities to build capacity in community-based health promotion projects (Nepal & India), improving midwifery education to achieve international standards (Nepal) as well as working with the United Nations' agency IOM (International Organisation for Migration) to study the health and well-being of Nepali migrant workers in other parts of Asia and the Middle East.

Objective c. Growth of PGRs and completions

The Faculty Postgraduate Committee monitors PGR progress and completion. Our REF 2014 strategy to support BU staff to complete their own PhD has increased completion rates, but also facilitated a significant shift in the PGR community, moving from predominantly PT staff (70%) to the majority of students being FT and more with external funding. This has resulted in a cohort experience in the current REF period with more FT PhD students (both in absolute numbers and as proportion of the PGR body), which in turn helped to improve the research environment for PGRs. The number of PhD completions is steadily increasing from a combined total of 34 completions in health and social sciences (REF 2014) to 52 in the health field alone during the current REF period ending in 2020. We are steadily increasing our number of PGRs, partly through increasing self-funded PhDs and partly through fellowships such as our innovative [Clinical Academic Doctorate](#), introduced in 2014. The Clinical Academic Doctorates have been adopted by many NHS Trusts in the South of England and have been accepted by the Department of Health onto the NIHR portfolio as part of the Wessex Integrated Clinical Academic Programme. This Programme has also been recognised nationally as an example of excellent practice (AUKUH Clinical Academic Roles Development Group). In 2020 the Clinical Academic Doctorates comprised one-eighth of all registered PGR students [n=13/102]. The strong collaboration with our partner organisations (in the UK and abroad) ensures that these opportunities are driven by identified practice needs to ensure we are addressing the right questions, which facilitates greater impact from the research.

Objective d. Expand research impact with UoA3

Research impact has been a key strategic imperative since 2012. Within our growing staff base we have increased the number of Impact Case Studies from three to six between 2014 and 2021 in

Unit-level environment template (REF5b)

UoA 3. Our faculty strategy is supported by the university strategy BU2025 which aims to “enrich society by having a significant impact on challenges world-wide” (see REF 5a). Within this there is an equally strong commitment to demonstrate impact.

Our UoA has two overlapping strategies for impact addressing both UK regional and national impact and the global Sustainable Development Goals (SDGs). Our strategy with regard to the former impact includes developing a continuum from supporting adoption to the spreading of innovation. BU is working with health and care partners and HEIs across Wessex to establish an Academic Health Science Centre (AHSC). The AHSC reflects our commitment to FUSION. The Wessex partnership has also submitted an application for funding to develop a Dorset Integrated Care System (ICS) Innovation Hub, which will act as a facilitator for innovation across our regional ICS, one of the first in the country, providing a coordinating link between its members and the wider networks; and a source of expert innovation, support and resources.

Our strategy regarding the SDGs is facilitated by the support from BU which has the SDGs high on its agenda and they feature prominently in BU2025. We have embedded the SDGs as key contributors of the long-term and sustainable growth of BU, aiming towards building and maintaining a vibrant university within a sustainable society (see Institutional Statement REF 5a).

Within the 17 SDGs [and its 169 associated targets], UoA3 focuses predominantly on SDG 3 (Good Health & Well-Being), 4 (Quality Education), 5 (Gender Equality) and 17 (Partnerships for the Goals). Our six submitted Impact Case Studies are all firmly anchored in SDG 3.

BU has appointed an academic in the role of Impact Champion. UoA 3 instigated this idea and we appointed the first Impact Champion, who is dedicated to helping colleagues through the process of conceptualising potential impacts, understanding the various pathways to reach impact and signposting academics to possible sources of support in reaching maximal impact. This Impact Champion (see Infrastructure below) helps to ensure that impact is embedded within most research in UoA3. The Impact Champion's role is to identify projects that have significant potential for impact and ensure that the researchers involved engage in impact-related activities (including collecting appropriate baseline data). Furthermore, their role is also to promote the future development of Impact Case Studies and support the academics writing them.

Table 1 UoA3 Impact Case studies with lead academics

Case study #	Lead author	Case study Title
1	Sarah Thomas	Reducing the impact of fatigue in people with Multiple Sclerosis using a novel fatigue-management programme.
2	Tom Wainwright	Reducing costs and improving patient outcomes through Enhanced Recovery After Surgery approaches in orthopaedics
3	Ian Swain	How our Electrical Stimulation devices have improved long-term medical conditions
4	Tom Wainwright	Creating a global market for a novel medical device – how our research helped make it happen
5	Peter Thomas	Emotional processing and its impact on mental and physical health
6	Jane Murphy	New tools to identify older people at risk of malnutrition and improve their nutritional care

Outcomes of this work can be judged in our six Impact Case Studies (Table 1), but we have supported the development of several further Impact Case Studies throughout this REF period. Beneficiaries of our work reported in these Impact Case Studies include, first and foremost, patients and the general population, but also health organisations (especially the NHS), non-governmental organisations (NGOs)/charities and governments at all levels. The reach of our

impact ranges from regional to global. In addition, we can already look ahead to REF 2026 with a strong number of prospective Impact Case Studies, currently under development.

Research integrity

The research governance element of our strategy and management of its operationalisation is overseen by the Faculty's Research & Professional Practice Committee (FRPPC). There is a strong input to the committee from our NHS partners, through staff with dual NHS-university appointments and roles. We invested in a Clinical Governance Adviser to provide regular training in Good Clinical Practice, research governance and integrity, and data management. Regular cross-Dorset meetings on research governance ensure that partner organisations work together throughout the research process. FRPPC is an interdisciplinary body that identifies priorities and strengths, evaluates these on an on-going basis and monitors all FHSS research linked to the UK Research Concordat (see REF 5a). Strategic directions are built in, refined and operationalised within the six research groupings. Staff members are based in departments for HR and management reasons. FHSS departments were reorganised in 2019 and four health ones were successfully established. Since then Heads of Department have developed research strategies to identify both strengths and areas for action. These includes ensuring that all academic staff have protected research time, which is a continuous challenge in health departments with longer teaching terms (i.e. more weeks per year) than elsewhere in the university.

Our UoA3 has several staff representatives on the two BU institutional ethics review boards (REF 5a). The value of this strong link is that ethics committee members train their colleagues to improve research applications to produce better quality research in the long run.

Interdisciplinary research

With 18 different disciplines in the UoA a large body of our health research is by definition multidisciplinary. We encourage the development of ideas through so-called 'Sandpits' and 'Steam labs', but also regular coffee mornings to bring staff together and interact and share ideas and issues. At a wider level our BU's Strategic Investment Area 'Medical Sciences' (see above) actively encourages interdisciplinary teams in its funding calls. Four of the six Impact Case Studies for our UoA reflect the interdisciplinary/collaborative character of health research as well as the applied nature of most of our research. For example, our work with Dorset ICS which combines and health and social care in both practice and research. We demonstrated how we supported interdisciplinary research across BU using Sandpits/Steam labs bringing academics together around specific topics (so-called wicked problems), providing a dedicated and uninterrupted period together to brainstorm research questions and well as research proposals to address some of these questions. BU funds the Sandpits and Steamlabs centrally (see REF5a).

UoA3 researchers are trained in a range of health, natural science and social science disciplines and they work multidisciplinary, interdisciplinary and transdisciplinary dependent upon the research question. The interdisciplinary teams may comprise UoA3 staff collaborating with academics trained in other disciplines, in other BU faculties, the NHS, industry, and/or other Higher Education Institutions across the globe. The first large-scale example is the EU funded Digital Health and Care Catalyst (DHaCC) project, a multi-disciplinary team led by Tee (Nursing) and McGhee (Genetics). BU's share is nearly two million. A second smaller-scale international example is the British Academy award of special COVID-19 funding of £10k for an interdisciplinary project between sociology, public health and nursing with the title; "Fear, Stigma and Othering: The Impact of COVID-19 rumours on marginalised population groups of Nepal" (led by Regmi in NLTH).

We use the award-winning BU Research Blog (<http://blogs.bournemouth.ac.uk/research/> also Section 2 below) to highlight our successes in research, from grant applications to publications and dissemination events. This helps raise awareness of our research across the globe but also across BU. The Research Blog is recognised as a medium for staff to find out what people in other faculties are doing and thus it is also a tool facilitating the development of interdisciplinary collaborations across the university.

Unit-level environment template (REF5b)

We have also raised awareness that interdisciplinary research is not as easy as is sometimes suggested, as highlighted in a methodology paper by UoA3 staff [<https://doi.org/10.3126/hprospect.v18i1.19337>].

Interdisciplinary research is an important BU focus, reflecting our BU2025 long-term strategy. We aim to link the development of interdisciplinary research, with strategies to enhance interdisciplinary teaching and professional practice. By taking this holistic approach, the opportunities to meet researchers from other disciplines becomes easier to accomplish.

2. People**Staff strategy**

Our inclusive research culture is reflected in our large submission of staff, 77.33 FTE, an almost four-fold increase from 2014, and including staff at all career stages. This growth results from our institutional strategy to support all academics in pursuing research excellence. There are no teaching-only contracts at BU; all BU academics have a 'Fusion' contract, meaning that they are expected to participate in research, education and professional practice. The result is that a high proportion of our staff (64% of FTE) has been submitted to REF 2021. We are confident that this is a far higher proportion than other post-1992 universities with a similar-size nursing, midwifery, and allied health faculty, and where teaching-only contracts are (very) common.

Our recruitment strategy in health builds upon our areas of research strength, continuing to increase our leading international research units and strengthen our UoA. UoA3 has benefited from significant BU staff investment since 2014, including nine professorial appointments: Way (Midwifery), McConnell (Exercise Physiology), Murphy (Nutrition), Holley (Learning Innovation/NLTH), Hemingway (Public Health), Middleton (Orthopaedics), Errser (Nursing), Fenge (Aging), Clark (Physiotherapy). This is double the number reported in REF 2014 when we appointed four new professors in the period 2008-2014. Since 2014 we have also appointed several Associate Professorships, including Heaslip (Nursing), Scammel (Nursing), Wainwright (ORI) and Franklin (IMIV), the latter is a joint appointment with the local NHS. We have several joint appointments with the two regional NHS university trusts and further appointments are planned for the near future. In addition, there have been faculty support for seven post-doctoral researchers and two have since moved to subsequent academic appointments at BU (one each in UoA3 and UoA4). Similarly, nine of our PhD students (some on scholarships and some self-funded) have started academic posts in our Faculty.

BU has been successful in 2019 in retaining the [HR Excellence in Research Award](#). This success was partly due to highly active UoA3 staff on university-wide initiatives. The Award demonstrates BU's commitment to aligning process and practice to the UK ([Concordat to Support the Career Development of Researchers](#)) and improving the working conditions and career development for research staff (REF 5a). The UoA has invested in a permanent PDRA to become the institutional representative which will make a substantial difference to the implementation of the researcher concordat.

Staff development

UoA3 has taken a long-term approach to staff development starting from 2008. At the time of REF14 only 38% of academic staff had a PhD, this has risen significantly over the past seven years to 68% in 2020 and continues to grow. The impact of this can be seen in the growth of research outputs (see Section 1) and academic bidding activity (Section 3) which has resulted in substantial growth of ECRs in UoA3.

Departmental infrastructure includes a head and deputy heads to promote staff development, including research. Succession planning is written into the structures so that incoming leaders can shadow and benefit from the knowledge of previous role holders. Our research strategy is overseen at the individual level by the appraisal system and links to the wider faculty and university

strategies and KPIs. The annual staff appraisal system ensures that our staffing strategy is aligned to meeting the key research-related performance indicators of the BU2025 vision and Fusion.

Specifically, we have continued to support staff towards research excellence in the following ways:

- **Better leadership and management structures.** Through the creation of a Departmental Head of Research role (now a Deputy Head of Department), enabling a new focus on our research environment at Department level.
- **Tailored support for researcher development.** Through the production of an annual *Personal Research and Impact Plan* as the basis for short and medium-term career planning. Through dialogue with research mentors and departmental leadership, these research plans also identify development needs that can be acted upon.
- **Time for research.** Our institutional workload model foregrounds substantial opportunities for research as a defining characteristic of all academic roles. All academics are given a minimum of 30% of their workload for the purposes of research. This stands as a central tenet for institutional commitments to 'Fusion'. Flexibility is also allowed for staff to balance their workloads e.g. towards teaching in one semester, so that they have more intensive research time in other semesters.
- **Mentoring.** Since 2014 we have expanded our mentoring scheme so that *all* faculty staff are assigned a mentor who they meet at least once during a semester. Mentoring is shared between senior staff members within the faculty and we monitor the gender balance of mentors/mentees. All staff members, who mentor, are required to attend staff development sessions on coaching and mentoring. Since 2019 we have embedded mentoring more formally into researcher and career development by aligning it with: a) individual research plans, b) the appraisal and c) workload planning. Staff can also be appointed an additional mentor (with appropriate experience) when applying for research grants and when taking on research leadership roles.
- **Research leave.** Colleagues are able to apply for research leave. There have been a small number of beneficiaries in the unit. These periods of leave were highly productive and have resulted in outputs entered into this REF submission.
- **Access to funds for conferences and travel.** Approximately £300k including £25k from Santander Mobility Award (in 2019) was invested in conference attendance, travel to research and/or networking meetings and specific external training for staff (e.g. health economics module at other institutions) during the REF period, some was supported.
- **Investment in supporting colleagues to disseminate their research.** At both industry and policy stakeholder events. This often includes supporting the costs of public engagement events, as part of a strategy that supports engagement with non-academic stakeholders.
- **Specific QR support for leadership of and engagement with national and international subject associations / academic networks.** Separate to the funds allocated to conference attendance, funds were invested in institutional membership of academic networks/ associations and in supporting staff to take leadership positions within these. Unit staff have held a number of subject leadership roles in this REF period (see Section 4).

Aligned with the Concordat to Support the Career Development of Researchers, we support staff through all stages of the research cycle through a programme of **staff development sessions**. Since 2017, our unit has benefited from the Research and Knowledge Exchange Development Framework (RKEDF) (see REF5a), which offers a range of opportunities for academics to develop their research skills, knowledge, and capabilities. Programmes include: writing for publication, grant capture, research project management, career planning, international collaborations, impact, and public engagement. Sessions offer specific support for ECRs, mid-career academics (new to research), mid-career academics (research leaders) and the professoriate.

Subject specific research skills development is provided through events and initiatives hosted by research centres, departments and the faculty. These include:

- Research seminars organised by research centres in this REF period, featuring internal and

Unit-level environment template (REF5b)

external speakers.

- Research process seminars, organised at faculty level, which share the *process* of doing research - the methods, approaches, failures and successes in conducting research projects - as a means of staff development.
- Writing days - held either off-campus or virtually - where colleagues share writing goals and conduct focused writing together with a specific workshop on writing and publishing systematic reviews.
- Writing weeks – dedicated weeks scheduled in the faculty timetable in which no teaching or meetings are scheduled.

Other institutional facilities that support the mentoring of staff include the dissemination of research information via the award-winning (HEIST Awards, 2012) BU Research Blog. This plays an important role in raising staff awareness of research support resources, bidding opportunities and internal events across the university. BU also subscribes to the website, Research Professional, which is widely used by staff.

For staff undertaking their PhDs, the Doctoral College provides supervisor support and mandatory updating training. Our UoA3 academics play a key role in the development of the Doctoral College, for example, our staff proposed in 2019 the opportunity to submit an integrated PhD thesis. It offers PGRs the flexibility to submit a hybrid thesis, combining purposely written thesis chapters with already published papers in peer-reviewed journals. The first student to do so successfully in 2020 was based in FHSS with a lead supervisor based in UoA3. FHSS is leading the way within BU in supporting UoA3 staff to seek Research Supervision Recognition from the newly established UKCGE (UK Council for Graduate Education). As part of this UK-wide pilot scheme the first four UoA3 staff became members of the UKCGE Research Supervision Recognition Programme in late 2020.

ECRs

UoA3 offers a supportive research environment for our ECRs; we have been actively increasing the body of ECRs during the REF period. In REF 2014 we submitted four ECRs compared to twenty in 2020. Some of our non-staff PhD graduates have since become BU staff (Aryal, Collard). This complements the wider institutional support via the BU ACORN scheme that has led to four awards to ECRs in the UoA (Aryal, Simkhada, Mohan, Hussain). We are encouraging and supporting budding researchers to apply for small to medium-sized external grants whilst supporting more experienced staff to seek larger (interdisciplinary) grants especially from Research Councils and the NIHR, something which is also supported by BU's Bridging Fund Scheme which aims to provide additional stability to fixed-term researchers between grants.

The UoA has supported dedicated ECR schemes for writing, grant application and methods training, which again both complements and specifies institution-wide provision, including pump-priming through the BU ACORN scheme. ECRs are also trained to embed impact into their research and workshops and mentoring schemes are provided for that purpose. BU has its own Early Career Researcher Network. This Network meets monthly, offering the opportunity to meet other ECRs from across the university and ask questions about any aspect of work. Meetings are run by two experienced academics, one from UoA 3 (Hemingway) and ECRs are actively encouraged to attend.

As an example, three of the initial Clinical Academic Doctorates in CMMPH now have appointments with BU and we are working with NHS Trusts to established joint clinical academic posts. We have strengthened our staff development, especially for ECRs and new lecturers with regular writing workshops both on grant applications and publications, facilitated by both internal and external experts (funded by QR and BU funding). The result has been a steady increase in grant applications and high-quality publications. This strategic move continues to the present day.

ECRs are offered the opportunity to develop through the Vitae Researcher Development scheme, writing workshops, grant-writing academies and mentoring. The departments and groupings work

closely with the RDS and doctoral college to facilitate these. The Research & Knowledge Exchange Development Framework (RKEDF), which started in 2016, replaced a similar slightly less extensive BU scheme. The RKEDF offers training and development opportunities to academics at all stages of their career, supporting staff to increase their skills, knowledge and capabilities. BU offers post-doc bridging (which is competitive) to fund up to three months gap in contracts for research assistants, this is particularly helpful to academics who have new research grants starting but not at exactly the time the previous one finishes for the RA. For example, Collard benefited from being a RA in UoA3 and is now lecturer in Psychology. The staffing strategy is underpinned by our approach to research developed in FHSS which seeks to develop research in our seven research groupings. We link this to wider opportunities such as the Wessex Integrated Clinical Academic Programme (see Section 1 above).

Equality and Diversity

Equality and Diversity issues are of paramount importance in UoA3. We take an inclusive approach to research capacity building, supporting careers and promoting interdisciplinary research. Our staff are involved BU's Women's Academic Network, and we are heavily involved in activities to promote Athena Swan principles, following BU achieving a Bronze award for the Athena SWAN Charter for Women in Science. As a Faculty of Health & Social Sciences we have worked hard, with success, on increasing the ethnic diversity of our staff. BU is also a member of the Positive for Disability 'Two Ticks' scheme.

In REF 2014 the proportion of REF-eligible men submitted was significantly higher than the proportion of potentially eligible women within the faculty. The faculty has worked hard to address this through a variety of means. Firstly, academics in UoA3 were instrumental in starting the first BU-wide Athena Swan application and helping to achieve a Bronze Award. Secondly, having analysed the REF 2014 submission and reflected on the selection process, as part of the faculty's gender and research action plan (see also REF 5a), the UoA3 research leaders developed writing workshops targeting eligible members of staff (particularly women) who had not been submitted to REF 2014 or who had not put themselves forward. The aim of the intervention was to: (a) support this group of staff to aim for higher quality publications and grant applications to fit the REF criteria next time round and (b) increase self-esteem among staff who did not put themselves forward in the last REF. In REF 2021 the gender balance of staff was reversed from 2014 as 59 females and 28 males were submitted.

All UoA3 staff with responsibility for recruitment receive diversity and equality training to ensure that all relevant principles are upheld. The HR department and the Faculty Research Committee review these procedures and monitor the departments' commitment to good practice. Following the reorganisation of departments in 2018, our health departments are keen to apply for individual Athena Swan status in late 2021, when we will have been in existence for three full years, as we need to present data on gender for the previous three years. Meanwhile we are working on several Athena Swan departmental submissions at the time of the REF2021 submission. We also aim for flexibility in working practices to ensure caregivers' needs are taken into consideration and academics have a good work-life balance.

PGRs

Overall, UoA3 had 127 doctoral students at the end of 2020. To support our PhD students each one has been allocated a 'bench fee' of £ 3,000 (about £1,000 p/a for three years) to support their fieldwork, attend external training sessions, present at conferences and attend any specialist research methods training or software that is not already offered by BU.

All students have (at least) two supervisors to ensure that: (a) the PhD student is exposed to a range of views and approaches and (b) offer stability (should one supervisor leave or fall ill). We have been successful in developing joint clinical four-year doctoral PhD studentships with the NHS, in order to facilitate clinical academic careers. A total of 22 students have started on this scheme since 2014, the first student completed their PhD in 2019 and is now an ECR in UoA3; employed

Unit-level environment template (REF5b)

part time with the university and part time in clinical practice. To ensure high quality of supervision we train all our postgraduate supervisors and ensure they have three-yearly compulsory updates. The UK Council for Graduate Education (UKCGE) recently (mid-2020) launched its Research Supervision Recognition Programme. BU is one of 13 universities in the pilot. The programme recognises and celebrates good practice in research supervision, and four of our UoA3 staff have already been recognised by UKCGE.

We have a greater number of completions than in the 2014 REF partly due to our efforts to support staff registered for PhDs. In addition, staff contribute to research capacity building and developing the research culture at BU via taught postgraduate education (e.g. MSc Public Health, MSc Health Res, MSc Social Care Research, MSc Digital Health) and provision of methodological advice by BUCRU.

The Doctoral College produces a monthly newsletter, offers expert research and knowledge exchange talks, lectures and workshops to enhance the quality of PhD supervision (see REF 5A Institutional Statement). Approximately 35% of these sessions are facilitated by UoA3 staff as our on-going commitment to BU's institution-wide Research Development Programme, which is aligned with the Vitae framework. It is structured into four domains and 12 sub-domains, encompassing the knowledge, intellectual abilities, techniques and professional standards required to do research, as well as the personal qualities, knowledge and skills to work with others and ensure the wider impact of research. Annually there are over 100 workshops and online modules as part of this framework, many of them repeated multiple times during the year. All doctoral students work with their supervisors to undertake a learner needs analysis and negotiate a personalised learning plan. There is flexibility to create tailored researcher development programmes, identify individual training needs and move between disciplines to ensure PGRs' work is developed using the latest cutting-edge technologies and approaches. Full-time doctoral students are expected to attend a minimum of 10 workshops, one academic engagement activity and one public engagement activity per year of registration. The Faculty of Health & Social Sciences recently introduced departmental PGR leads to help support students and supervisors at departmental level.

Plans for increasing numbers of research students

A key element of our research strategy is to increase the numbers of PGRs, especially in collaboration with regional partners to address practice-framed societal challenges. We seek to achieve this through our strong links with the NHS, local authorities and non-governmental organisations to develop match-funded studentships and bidding for fully funded studentships. The latter includes bidding for internal BU studentships as well as studentships advertised by external funding bodies such as NIHR and The Wellcome Trust. For clinicians, we support applications to the Health Education England (HEE)/ NIHR Integrated Clinical Academic (ICA) Programme. We promote this as part of our continuum from internships to completing a doctorate.

Our PGRs are funded in diverse ways. Our expertise attracts full-time international students, both sponsored and independently funded. BU has continued its investment in fully and matched funded PhD studentships (£5m since 2014) and is committed to funding at least 50 such studentships per annum, across all faculties, until 2025. Since 2014, we have benefitted in this UoA from five BU Studentships, one Vice Chancellor fee-waiver scholarship, and 22 matched-funded PhDs. The latter includes our Clinical Doctorates, all competitively won, for example we have two with Dorset County Hospital NHS Foundation Trust in Dorchester, eight clinical doctorates with Portsmouth Hospitals NHS Trust (one of the largest acute hospital trusts in the country), three with University Hospitals Dorset NHS Foundation Trust and one each with Isle of Wight NHS Trust and Dorset HealthCare University NHS Foundation Trust. Our strategy is to increase the numbers of externally funded scholarship and match-funded studentships in the new REF period.

PGR Administration, milestones and monitoring

Student progress is monitored by the Faculty Research Degrees Committee, chaired by the Deputy Dean for Research and Professional Practice. A traffic light system triggers action (by PGR Lead, Committee chair, or other as appropriate) when any individual's progress appears to be at risk. This Committee is a subset of the Doctoral College, which has overall responsibility for progression and oversees implementation of the BU Doctoral Code of Practice.

The FHSS Research Degree Committee monitors progress which is recorded on an integrated digital system called ResearchPAD (Progression, Administration & Development). This system tracks progression against expected date and targets and it requires supervisors to sign off students' progression, i.e. certain 'stepping stones'. The above-mentioned departmental PGR lead helps with early identification of (1) potential stumbling blocks for PGRs (and occasionally supervisors) and (2) solutions to counteract such problems. As a consequence, our PhD completion rates have already increased (see also Section 1 Objective c.) as mentioned, whilst our attrition rate of PhD students has fallen at the same time.

Students document their activity in relation to set milestones and upload relevant proformas via the online interactive administrative system, ResearchPad, which supervisors also use to monitor progress and record feedback. There are also annual re-enrolment reviews which are recorded on ResearchPad and which provides a more holistic overview that considers teaching duties, conference attendance and publication opportunities and also acts as a measure to identify any doctoral training needed. To help support PhD students affected by COVID-19 BU funded extensions of students in their final year of writing up their thesis.

3. Income, infrastructure and facilities**Income**

UoA 3 research income for the REF 2021 period was £7.6 m. This is almost triple what it was in REF2014 with the average annual income increasing by 93%. Growth of research income across the REF period is outlined in Figure 4:



Figure 4. Growth in research income over REF 2021 period.

Over the REF period a substantive share of the research income came from the NHS, the remainder is a mixture of funding from the Research Councils, NIHR, European Commission (EC), charities, industry and overseas sources and have diversified as outlined in Figure 5.

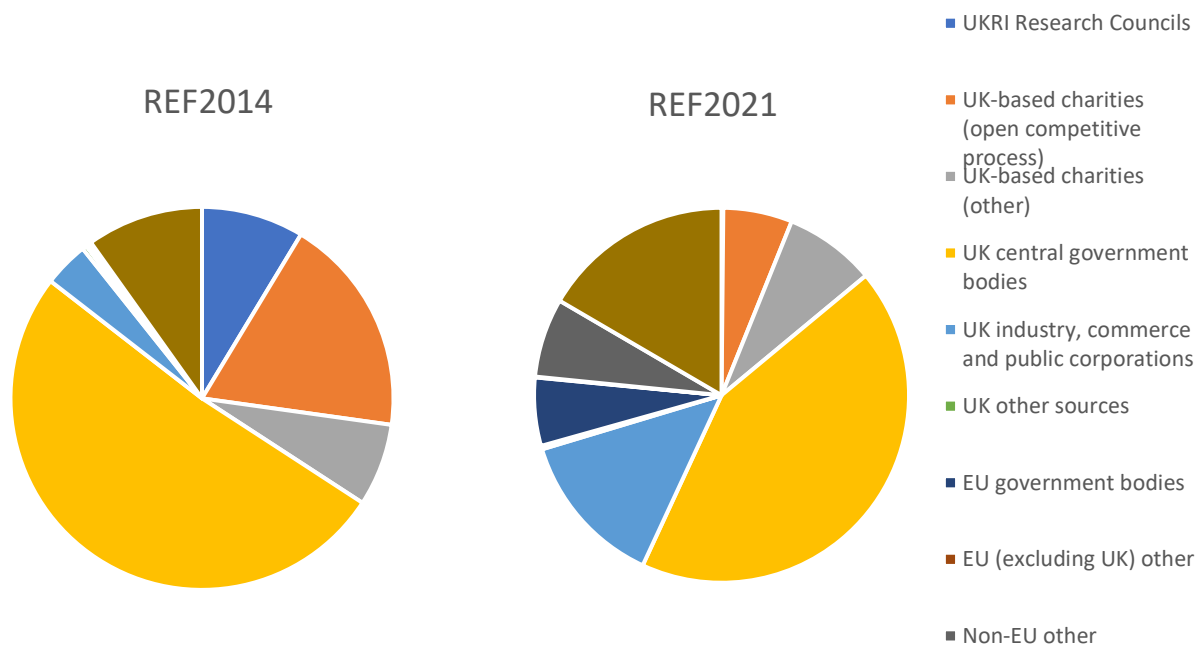


Figure 5. Research income by source over REF periods.

Strategies for generating income

Strategies for increasing research funding are determined at our Faculty Research and Professional Practice Committee where figures and trends are analysed and at which the performance of our priority areas and groupings is monitored.

Bid writing workshops are held and successful researchers are asked to share knowledge with junior researchers. In order to increase the success of larger and research council bids the department encourages the fostering of links with successful peers external to the university – both nationally and internationally. These have resulted in securing funding from: MRC, NIHR, GCRF, THET, Newton, GIZ (Germany), British Academy and Burdett Trust. Our strategy is to develop our focused areas and to add this expertise to the development of wider, often external bids.

QR funding has supported UoA3 seed-corn grants which are open to all researchers, including ECRs and the development of research networks. Several of the seed-corn grants have resulted in subsequent bids for external research grants, and some of these bids have been successful, for example, British Academy bid on migration and health (Aryal, Regmi, Dhakal Adhikari [submitted to UoA 20]). Departmental allocations support travel, network development and conference attendance to disseminate research.

Infrastructure and facilities

Over the past decade BU has invested in a large-scale building programme (See REF 5a). For most staff in UoA3 this meant moving to a single new building in late 2020. This brought academics together in a modern building (Bournemouth Gateway Building costing £47.5 million) which includes a purpose-built library and various laboratories for nutrition and physiology. We have additional facilities in BU's Executive Business Centre which houses ORI Gait lab, a world-class facility utilising the GRAIL system (Gait Real Time Analysis Interactive Lab). This environment creates a workspace that facilitate collaboration, innovation, and the dissemination of excellent research.

Academics are aided by bid writing workshops, research away days, mentors, research pump-priming awards from QR funds and central support from BU's Research Development & Support (RDS) with targeted schemes for ECRs, mid-level academics and professors. A focus on working collaboratively with other universities and research teams underpins our aim to secure an increase in research council funded research. BU2025 sets targets for academics to meet in respect of research income focusing on combining groups of more junior researchers led by a professor. Staff in UoA3 have been working on development plans for a Biobank. To date the governance framework for compliance with the Human Tissue Authority standards has been completed and facilities to host the biobank have been identified. We have drafted the required regulations and set up governance and scientific research committees to ensure continuous adherence to the Human Tissue Act.

BU has a REF Outputs Committee (chair van Teijlingen, see REF5A) which promotes Open Access and allocates BU funds to staff (including ECRs and PhD students) to publish in journals that charge a publication fee. The REF Outputs Committee manages an Open Access fund. All BU staff can submit work and request for one article per year to be funded for Gold Open Access. The only pre-requisites for this are that the paper would be eligible to be submitted as an output to REF2021. In addition to the Gold Open Access Fund, staff must submit the accepted version of a manuscript to our own store of research articles in order to achieve Green Open Access.

The university database *BRIAN* and repository *BURO* are used to ensure Open Access for all our publishing, both Green and Gold Open Access. We have competitive funding available for staff and PhD students to help promote Gold Open Access. All outputs submitted to REF 2021 outputs are thus in *BURO* – the university's online repository, including 98% of all peer-reviewed outputs produced by UoA3 staff during the REF period. Having outputs added to *BURO* increased the visibility of our health research across the globe.

Towards the end of the current REF period we launched the BU research data repository *BORDaR* (Bournemouth Online Research Data Repository) to provide a secure and open access home for our research data. Studies from UoA3 were amongst the first to be added to this repository.

BU established its Prestigious Research Funders Scheme in 2018. The purpose of the scheme is to provide internal investment for additional research staff/students on externally funded research projects and to support ECR fellowship applications to external research funders as well as internal ACORN funding (see above). The scheme typically provides an incentive payment of 5% of income arising from large single research projects (or a cumulation of smaller number research awards in a financial year) enabling academics to build external networks and conduct pilot studies prior to grant applications, etc. The schemes aims are to:

- build research capacity and capability in areas of strategic importance;
- enhance the sustainability of the university's research culture and environment;
- recognise and reward the research grant successes of academic staff.

UoA3 staff who have benefitted from this Prestigious Research Funders Scheme include: Murphy, Tee, Hemingway, Wainwright and P.Thomas.

BU has a competitive scheme to support enhancing work with charities, entitled the Charity Impact Acceleration Fund, and designed to support enhancing work with charities. UoA3 members have received c.£7k worth of support in the REF period.

COVID-19 had disproportionate impact on UoA3 in 2020 as many research-active staff also had professional commitments, with a number of academics engaged in a rapid response to facilitate the early release of BU third-year health students into the NHS on COVID-19 placements. Research activity in UoA3 was disproportionately impacted by the pandemic. In addition to projects being suspended or delayed, many staff had professional and practice commitments. Educational priorities, such as responding to the NHS requirement for the early release of third-year health students, also limited research capacity.

Unit-level environment template (REF5b)

We were aware that the gender balance of the UoA could have an impact, as female academics have been found to be adversely affected by lockdown. With a higher proportion of women in our UoA (59 compared to 28 men), we provided targeted support in academic writing and grant-writing at flexible times.

BU has both a REF Impact committee and an Output Committee each chaired by a senior academic, which comprises all individual UoA Impact and Output Champions (see REF5a). The UoA3 Output Champion is currently Regmi who succeeded Heaslip (2017-2019) and the Impact Champion is Nyman who succeeded Collins in early 2020.

At faculty level we support data-gathering, analysis and dissemination of impact across all research, regardless of whether this will lead to a REF Impact case study. By enhancing our research culture, we have invested heavily in our infrastructure supporting impact, with one dedicated impact officer and one impact-oriented PDRA (QR funded posts), internal funding streams and workload relief for those pursuing Impact Case Studies (see Section 3). Our key commitment is to put health impact at the heart of our research culture.

BU established its Fusion Investment Fund and UoA3 academics benefitted from this until it finished in 2018. This Fusion Investment Fund was superseded by BU's Strategic Investment Fund (SIF) in 2018. UoA3 has been a key beneficiary of the SIF, mainly for IMIV (see Section 1).

Research group infrastructure

The key part of UoA3 infrastructure are our research topic-related units (Figure 1) in alphabetical order: (1) ADRC; (2) CMMPH; (3) IMIV; (4) iWell ; (5) NLTH; and (6) ORI, all six are supported by the seventh, a more methodological support research unit called BUCRU.

ADRC fits in well as Dorset has one of the UK's largest (and most stable) ageing population in Western Europe and a uniquely integrated (devolved) NHS care system (one of the first in England). Dorset serves an older population - 20 years ahead of the UK average - with rising incidence of long-term conditions and significant variation in life and healthy life expectancy. ADRC research falls under three broad categories: (1) developing ageing & dementia friendly environments; (2) nutrition & wellbeing; and (3) activity & social inclusion [www.bournemouth.ac.uk/research/centres-institutes/ageing-dementia-research-centre]. ADRC research helps save resources for a stretched NHS, with Dorset being used as a 'test bed' for how to best deal with ageing populations nationwide. Recently funded research includes the **NIHR-funded** TACIT Trial – tai chi for people with dementia (Nyman). Focus areas of ADRC include: (1) Tackling malnutrition in older people (Murphy); Dementia and spatial disorientation in ageing (Weiner); Enhancing dementia education and learning through simulation (Murphy; Board).

CMMPH has a global profile in the maternal and child health field identified through the extensive number of international and national collaborations of its academic staff. For example, Hundley's work with the WHO on international guidelines (see Section 4), a commission from the German government aid agency GIZ to design, deliver and evaluate a midwifery programme for nurses currently teaching midwifery in Nepal (Angell, Hundley, Irving, Mahato, Taylor, van Teijlingen, Way, Wood). This project (2019-2021) is based on our research experiences in midwifery education and research-capacity building in Nepal. In 2020 the proportion of UoA3 staff engaged in research bidding varied by research grouping, which largely reflects the number of academics still registered as a doctoral student in a grouping. The latter is the highest in CMMPH and hence its proportion of staff involved in competitive research bidding is the lowest across listed centres in this UoA. In this REF period we also commenced a collaborative study led by the University of Sheffield, with the University of Huddersfield and organisations in Nepal on 'The impact if federalisation on Nepal's health system 2020-2023' - £809,040 (van Teijlingen).

IMIV (led by Franklin) supports high quality research and education in the fields of medical imaging and medical visualisation. It is situated in the Bournemouth Gateway Building (opened 2020) and houses key infrastructure investments, including a state-of-the-art Siemens 3T MRI Scanner (see

above). The IMIV strategy focuses on inter-disciplinary collaboration and innovation in the rapidly evolving field of medical imaging and medical visualisation technologies such as simulation and augmented reality. IMIV works with the NHS and industry to support the development of new technologies, such as machine learning and digital health innovation. For example, the IDIOM App, a web-based application, built at BU to predict the risk of gastrointestinal (GI) malignancy in patients with confirmed iron deficiency anaemia (P. Thomas). Particular areas of clinical interest are hepatopancreaticobiliary (liver, pancreas & bile ducts) imaging, gastrointestinal imaging, and brain functioning (the latter with colleagues in Psychology UoA4).

BU iWell as a research centre focuses on Public Health, the prevention of disease, and people already diagnosed with long-term and/or complex conditions. It applies an integrative approach to the understanding and promotion of health and wellbeing such as diet and nutrition, physical activity and contact with nature and animals. Recent research includes: Wellbeing in care homes – activities for quality of life and combatting frailty (Board); SAIL (Staying Active & Independent for Longer) Project – European project, helping people stay active for longer, while boosting local tourism/hospitality (Hemingway). SAIL -funded by the EC and INNOVATEDIGNITY (Hemingway) also EC funded in 2019.

NLTH is led by Ersser, Scammell and Heaslip. NLTH has identified thematic research programmes (ranging from a clinical to a wellbeing focus) in the field of: (1) Nursing Leadership & Practice Development Evaluation to support those caring for people with long-term health issues (Scammell, Morley); (2) Fundamentals of Nursing Care for people living with long-term health problems (Ersser, Tait, Green); (3) Promoting well-being for marginalised and vulnerable groups living with long-term health issues (Heaslip, Board) and (4) Palliative and End of Life Care (Porter, Randall). These four substantive programmes are also underpinned by a consideration of Transformational Technology (Holley) to support wellbeing and self-management for those living with long-term health issues and the development of nursing staff to effectively support them.

ORI specialises in high quality research in the fields of orthopaedic surgery, related diseases, treatments and medical devices. At a national level, ORI works to influence changes to policy, standards, treatment guidelines and patient expectations through the dissemination of its research. Key research includes pioneering enhanced recovery after surgery in the field of orthopaedics, Cycling Against Hip Pain (Middleton, Wainwright) and a prospective, observational, multi-centre, cohort study MASTERSL femoral stem in patients with degenerative disease of hip. 2014, funded by industry (LIMA CORP) £127k. See also three of our UoA3 Impact Case Studies.

BUCRU includes the South West NIHR Research Design Service (RDS), housed within our UoA. It is funded by a £5m grant (£0.5m to BU), and this co-habitation ensures high quality methodological and statistical support and collaboration in health-related research, including complex interventions (incl. digital health) and long-term conditions. BUCRU is involved in many trials, including: the CLEAT trial (NIHR-RfPB) (£350k); eLABS (NIHR) (£348k); Nerve project (NIHR-i4i); Active Ageing Evaluation project (Active Dorset/Sport England) (£38k); Value for Money in Multiple Sclerosis [MS] Treatments (UK MS Society) (£160k); Gambling project (SciTech) (Funding body: GambleAware) ST funded to provide trials expertise); Tricuro Delayed-Transfer-of-Care (DToC) Evaluation project (BU Pump-Priming). BUCRU facilitates a supportive environment in which clinical and non-clinical health researchers enjoy knowing where to go for advice and support. BUCRU links health researchers with (potential) NHS collaborators and offers clinical trial expertise as well as methodological support, including patient and public involvement (PPI) and critical review. Bid development was supported by BU's Grants Academy and BU's Research Development fund (£104k), and the European Research Development fund (£118k) to which academics can apply. This internal structure was further strengthened in 2018 with RKEDF plus five Funding Panels across BU. BU offers access to the Research Professional funding database, information databases, and an internal peer review service (from RDS) as well internal quality approval for all external bids. In 2020 Nyman was appointed as the new BUCRU director; he had previously been awarded two NIHR Fellowships, first a NIHR Career Development Fellow, followed by NIHR Clinical Trials Fellow (NB. Nyman is submitted to UoA4). FACETS study funded by the

MS Society in 2014 formed the basis for one of our six REF Impact Case Studies.

Public engagement in research

BU has established a unique partnership to incorporate PPI (Patient and Public Involvement) in all our health-related research. Within our UoA3 we have set up the Public Involvement in Education and Research (PIER) Partnership to help share patients and members of the public's perspectives and expertise in the unit's research from concepts, design to implementation and dissemination. PIER is linked with 103 organisations locally and nationally and FHSS academics who act as PIER Partnership members. PIER is our award-winning PPI unit, winning the *Daily Echo* 'Proud to Care Awards 2017' and NHS Health Education England Shine Awards 2015. We are very much aware that PPI is a very new concept in many of our focus LMICs (Low- and Middle-Income Countries). Therefore, we have introduced PPI in many grant applications in LMICs, especially in South Asia (Aryal, Hundley, Green, Simkhada, van Teijlingen, Regmi). We stress to our local research partners and funders the importance of local co-creation of research and health technology to reflect the needs of users within a culturally appropriate setting. We believe it is important for LMIC-based researchers to understand the potential of PPI and how it can contribute to the improvement of health care and research, in turn this will also increase the likelihood of the LMICs reaching their health-related SDGs targets.

In order to facilitate greater local and regional collaboration we actively promote our public engagement activities through BU's award-winning Festival of Learning (FoL), BU's Global FoL (<https://microsites.bournemouth.ac.uk/festival-of-learning/>), and Café Scientific (<https://research.bournemouth.ac.uk/cafe-scientifique/>). External engagement includes the ESRC Festival of Social Sciences <https://www.bournemouth.ac.uk/research/get-involved/esrc-festival-social-science-2019> (Irving, Taylor, van Teijlingen). Many of these events are not in university buildings but are deliberately held in community venues open to the public. These events have increased BU's knowledge exchange and have resulted in regional collaborations in nutrition (Murphy).

4. Collaboration and contribution to the research base, economy and society

Regional Collaboration

UoA3's research has been strengthened by our partnerships with various NHS partners in Dorset/Wessex, including two regional trusts with university status. NHS partnerships include a close collaboration with the NHS Dorset Clinical Commissioning Group (CCG) with which we have a formal collaboration with the newly formed (in 2020) University Hospitals Dorset (UHD) NHS Foundation Trust, whose university status recognises the close working relationship with BU on research and training opportunities as well as joint posts. We also conduct research together with Dorset HealthCare University NHS Foundation Trust, the provider of community-care and mental health services, Public Health Dorset, and a range of smaller NHS trusts, such as, for example, Dorset County Hospital NHS Foundation Trust, or Isle of Wight NHS Trust. Due to its island locality, the latter is the only integrated acute, community, mental health and ambulance health care provider in England.

We are working in partnership with the Visiting Faculty (Category C staff from NHS) to produce high quality collaborative research. This includes collaborative research projects, joint-funded clinical doctorates and joint PGR supervision (NHS staff as Visiting Faculty), focused public engagement activity, co-authorship of outputs and so on.

We encourage Visiting Faculty (Category C staff) to be actively involved in joint research collaborations which is especially beneficial for ECRs and junior researchers. Smith and Barnett are UoA3's top Category C collaborators with publications in high-impact journals. Such partnerships have strengthened the quality of the research produced by UoA3 staff.

Support for our collaborations is made through having academics in dedicated international

Unit-level environment template (REF5b)

support roles in both the department and the faculty. Collaborative links are monitored, and a database of links and personnel is available for consultation through our global engagement officers. As mentioned above our QR and departmental funding is focused on developing research networks.

We have worked closely with the RDS teams to make funding bureaucracy easier and smoother, and to facilitate collaborative bidding led by external partners.

National collaboration

National collaborations include: local, regional and central government organisations (including many NHS organisations and Ministry of Defence), professional sports clubs (including AFC Bournemouth and Southampton Football Club, some of it submitted to REF UoA24), charities (see below) and professional bodies and organisations, including NIHR ARC Wessex, AHSN (Academic Health Science Network), the Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust, CRN (see above), RCM (Royal College of Midwives), RCOG (Royal College of Obstetricians & Gynaecologists) and College of Paramedics.

We also collaborate with other universities in research in the UK (from Aberdeen to Sheffield.) This is assisted by encouraging and supporting writing projects from staff at other universities which regularly leads to further joint research.

Collaborations have developed with a range of non-academic groups, such as charities and non-governmental organisations, helping to ensure the research has impact in the wider society, e.g. NCT, MS Society, Age UK, MIND, and RAND.

Work with Dorset Integrated Care Services and the Allied Health Professions Council has resulted in a BU-led collaborative project relating to work-force planning and careers.

International collaboration

UoA3 has a global outlook in research, within the university it has been disproportionately successful (compared to other UoAs within BU) in awarded applications to the BU Global Challenges Research Fund (GCRF). In total five projects submitted by Aryal, Regmi, Simkhada, van Teijlingen, Board and Shanker (submitted to UoA4) were funded and in total £133k was awarded to projects in which UoA3 staff had a key involvement.

- a) Collaborations with universities in the USA (Hundley, van Teijlingen, Middleton, Tee), China (Tee), Nepal (Milne[†2019], Aryal, Mahato, Regmi, Hundley, van Teijlingen, Simkhada), the Netherlands (van Teijlingen), India (Clarke, van Teijlingen, Regmi), Pakistan (Hundley; Hussain), Malaysia (Clark, Aryal, Regmi), Norway (Heaslip), France (S. Thomas, Hemingway), New Zealand (S. Thomas, Brannelly, Middleton, Wainwright, Tee), International Early Labour Research Group (Hundley), Canada (Hundley, van Teijlingen), Slovenia (Hundley, Cescutti-Butler), Iran (Tee), Australia (Middleton, van Teijlingen, Tee, Wainwright), Germany (van Teijlingen), Qatar (van Teijlingen), Turkey (Tee) and UEA (Khattab). Staying Active & Independent for Longer (SAIL) an EU-funded study to develop social innovations across three European countries (Hemingway & Crossen).
- b) NGOs and charities such as Green Tara Nepal (van Teijlingen, Regmi, Simkhada), CMC Nepal, (Simkhada).
- c) International Sporting Organisations, such as the IFCPF (Ahmed), International Olympics Committee (Ahmed).
- d) Global organisations, such as the World Health Organization (Hundley, Hemingway) and United Nations affiliated bodies e.g. International Organisation for Migration (Regmi, Aryal, van Teijlingen).

Contributions to the discipline

Hundley is a Specialty lead for Reproductive Health & Childbirth for CRN Wessex. Murphy is Clinical Lead (Nutrition) Healthy Ageing Programme [Wessex AHSN], previously for the Nutrition in Older People Programme - Wessex Academic Health Sciences. During the REF period staff offered their services to a wide-range of academic journals as board journal editors, reviewers, editorial board members and book-review editors, and panel members of grant-awarding bodies.

Peer reviewing

Academic staff within UoA3 contribute to the disciplines by peer-reviewing for a diverse range of journals, including: *BMJ Online*; *BMC Public Health*; *BMC Pregnancy Childbirth*; *BMC Health Serv Res*; *Disorders*, *Int J Therapy Rehab*; *Ethics & Social Welfare*; *Sex Reprod Health Matters*; *Sociol Res Online*; *Arthritis Care Res*; *Journal Clin Nurs*; *Int J Older People Nurs*; *Healthcare*; *Japan J Nursing Science*; *PLoS ONE*; *Woman Birth*; *Midwifery (Elsevier)*; *Birth*; *Sexual & Reproductive Healthcare*; *J Gender Stud*; *British J Dermatology*; *Nursing Open*; *Nurse Educ Practice*; *Int J Childbirth*; *Medical Education*; *World Federation of Occupational Therapists Bulletin*; *J Asian Midwives*; *Dementia J Innovation Health Informatics*; *Int J Womens Health*; *Int Sports Coaching J*; *African Health Sci J*; *Brit J Educ Technol*; *BMC Musculoskeletal Disorders*, *Disability Rehab*; *Br J Sports Med*; *J Autism Develop*; *Nurse Educ Today*; *J Psychiatr Res*; *Radiography*; *Irish J Paramedicine*; *Brit Paramedic J*; *Physical Therapy*; *J Clin Outcomes Man*; *J Orthopaedic Sports Physical Therapy*; *Osteoarthritis Cartilage*.

Academics also reviewed for many national and international conferences, such as the tri-annual ICM (International Confederation of Midwives); International Nursing Education Conferences (NETNEP 2016 onwards); Second International Midwifery Education Conference (2018).

UoA3 academics were involved in wide-range of scientific committees/organising committees of health conferences, for example, Second International Midwifery Education Conference 2018 (Hall [left 2018], Way, Hundley, Taylor, van Teijlingen); STTI 4th Biennial European Conference 2017 (Hundley); Innovation in Midwifery Education: What works? (Hundley, Taylor, Way); Midwifery and the post-MDG agenda (van Teijlingen, Hundley). Ersser chaired the World Congress of Dermatology (Vancouver 2015) and Nursing Scientific Meeting and Inaugural Dermatological Nursing Leadership Summit; Tee has been on the scientific panels of several International Nursing Education Conferences (NETNEP).

Post-publication review for NIHR Dissemination Centre, NIHR Signals (Baron); UoA3 staff reviewed grant applications and advised grant-giving bodies in the UK, Germany, Belgium, Norway, the Netherlands, as well as for the European Union.

Editorial work

Editorial positions including editorial board memberships and editorships of academic journals/scholarly series: Aryal is Associate Editor for *BMC Public Health*; Brannely sits on the board of *Ethics & Social Welfare*; Burdett is board member of *Journal of Integrated Care*; Heaslip and Gelling are on the *J. Clin Nurs*; Ersser is on editorial board of both *Community Skin Health* and *Dermatological Nursing*; Regmi is on editorial board of *J Glob Health Reports*; Holley is on the board of *Int J Mobile Blended Learn*; Ahmed is Senior associate Editor *Br J Sports Med*; Wainwright edits *J Orthopaedic Clin Stud Advanced Res*; Gelling edits *J. Clin Nurs*, Swain is on the editorial board of *J Rehabilitation Assistive Technol Engineering* and *J Med Engineering Technol*; Ersser is co-founder of *J Clin Nurs*; Randall is on the board of *Comprehensive Child Adolescent Nurs*; Randall founded the Royal College of General Practitioner's (RCGP's) educational journal, *InnovAiT*; Tee has been Assistant Editor for *Nurse Educ Today*; Trenoweth sits on editorial board of the *Bri J Mental Health Nursing*; Williams is Associate Editor for *BMC Sports Science, Medicine & Rehabilitation*.

UoA3 academics were represented on editorial boards of all top four global midwifery journals: *Birth* (van Teijlingen), *Women & Childbirth* (Hall [retired 2019] & Way), *BMC Pregnancy &*

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Childbirth (Hundley [2010-2019] & van Teijlingen), and *Midwifery* (van Teijlingen & Hundley). In addition, the UoA3 includes one of the two editors of the *J Asian Midwives* (van Teijlingen) and Hundley is on the International Editorial Board for *Obstetrics & Gynaecology*.

Guest editor: Burdett was guest editor for a Special Issue of *J Integrated Care*; van Teijlingen for *SAGE Open* and Hemingway for *Int J Environ Res Public Health*.

Markers of esteem, fellowships, prizes

During the REF period BU hosted the All England Phi Mu Chapter of the Sigma Theta Tau International Honor Society of Nursing, which is both a sign of our international growth and connections in nursing and midwifery research and a contributor to it.

International appointments

UoA3 academics have been appointed as Visiting Faculty across the globe:

Clarke is Adjunct Fellow, Faculty of Health, INTI International University, Malaysia.

Ersser is Adjunct Professor at Memorial University of Newfoundland, Canada.

Ersser was Visiting Scholar at the Alice Lee Centre for Nursing Studies, National University of Singapore (2012-2018).

Green is Visiting Fellow at the University of Southampton.

Heaslip is Visiting Professor at the University of Stavanger, Norway.

Khattab is Visiting Professor at the AECC (Anglo-European Chiropractic College).

Khattab is Fellow of the Royal Society of Biology as well as Fellow of the Royal Society of Public Health.

Regmi is Visiting Research Fellow in International Health at Datta Meghe Institute of Medical Sciences which is part of Deemed University in Maharashtra, India.

van Teijlingen is Visiting Professor at two health colleges in Nepal: (1) Manmohan Memorial Institute of Health Sciences which is associated with Tribhuvan University, the country's oldest and largest university, and (2) Nobel College, associated with Pokhara University.

van Teijlingen is Visiting Faculty at the Centre for Disability Studies, Mahatma Gandhi University, Kerala, India.

van Teijlingen is Honorary Professor at the University of Nottingham [2017-2023].

Nyman (Fellow), with PRIMENT CTU support team NIHR Clinical Trials Fellowship.

Nyman (PI / Fellow), with CTU support team NIHR Career Development Fellowship (£655k from NIHR plus £32k from three regional NHS Trusts (total =£686,582).

Nyman appeared as an expert witness before House of Lords Science and Technology Committee: Ageing: Science, Technology and Healthy Living Inquiry (2019).

Hundley is an adviser to the WHO and a member of technical working groups that developed guidelines on Optimal Intrapartum Care and the Labour Care Guide.

Hartley is member of Discover Science Christchurch initiative -to set up a science centre. In 2020 Hartley became co-lead on PCR testing for COVID-19 at Poole NHS Foundation Trust Hospital.

Honours and special awards

Scammell is President of the England Chapter of Sigma Theta Tau International Honor Society of Nursing. Ersser (2018) and Hundley (2020) were both awarded International Nurse Researchers Hall of Fame by the Sigma Theta Tau International Honor Society of Nursing. Green received the Sigma European Regional Award & Recognition as a member of its Taskforce.

Heaslip was awarded a Travel Scholarship by the Florence Nightingale Foundation in 2017.

Heaslip received Woman of the Year award in 2019.

In 2015 van Teijlingen received an award from the Minister of Foreign Affairs in Kathmandu for service to health research and health research capacity building in Nepal.

Mills was awarded a Winston Churchill Travel Fellowship focusing on public health to visit Canada.

Hemingway joined the Chief Nursing Officer for England strategy development group for research

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in Nursing Oct 2020.

Buchan was an invited speaker at the UK All Party Parliamentary Health Group.

Hartley was awarded British Renal Society New Investigator Award in 2017.

Membership of expert panels and peer review colleges

Hundley is an advisor to WHO working groups, recent involvement includes guideline development including: '[WHO recommendations: uterotonics for the prevention of postpartum haemorrhage](#)' and '[WHO recommendations: intrapartum care for a positive childbirth experience](#).' This WHO research collaboration comprised: 'Technical Consultation on Evidence-based Review of the WHO Partograph and Implementation Research (2018-19)' and 'Better Outcomes in Labour Difficulty (2017-18). International partnership to improve labour outcomes'.

van Teijlingen and Hundley were part of the MRC peer review college during the census period.

BU staff were represented on NIHR committees included Ellis-Hill (RfPB South-West), van Teijlingen (HTA Clinical Effectiveness & Trials), Ersser (rapporteur Programme Grant for Applied Health Research), Murphy and Hundley (NIHR ICA Programme Clinical Doctoral Research Fellowship); Hundley (UKRI Future Leaders Fellowships programme Peer Review College).

Sarah Thomas is member of the MS Society funding panel

Ersser is current member of the NIHR Dermatology Clinical Specialty Group Committee and was co-lead on the national Nurse PI Working Group for the Committee.

Ersser sat on UK Dermatology Clinical Trials Network Steering Group (in early years of the REF 2021 period).

Ersser has been Expert Advisor to the English Institute of Sport for the British Olympic team on skin health since 2018.

P. Thomas – member of MS Society funding panels and member of MS Register Management Board.

Middleton is on NICE Quality Standards Advisory Committee for Osteoarthritis and is National Clinical Lead in hip and knee replacement at NHS Institute of Innovation & Improvement.

Swain acted as external expert on a NICE guidelines panel.

Franklin serves on British Society of Gastrointestinal & Abdominal Radiology (BSGAR) Committee and is the radiology representative on National Oesophago-gastric Cancer Audit (NOGCA).

Hundley serves on Wellbeing of Women funding panel, Newton Prize panel and is a reviewer for National Medical Research Council Singapore.

Keynote speeches

There have been many invitations to give keynote speeches at conference, too many to list all here. UoA3 staff gave keynote addresses or were invited to speaker sessions in the UK, Russia, Iceland, Ireland, India, Poland, Australia and the USA. For example, Buchan was an invited speaker at the Immuno oncology meeting in Brussels in early 2020; Ellis-Hill delivered a keynote speech at the 41st ASSBI Annual Brain Impairment Conference in Adelaide, Australia in May 2018; Hartley was invited as Plenary Speaker at the Physiological Society in 2019; Hartley was invited as speaker as part of UK Renal Week in 2017. van Teijlingen was keynote speaker at the 21st Nordic Midwifery Congress in Iceland in May 2019, he was also keynote speaker at the 2016 research conference 'Kennispoort' of the Dutch Midwifery organisation (KNOV). Franklin is regularly invited as speaker by the Royal College of Radiologists, the British Institute of Radiology and BSGAR Annual Meetings. Murphy was invited to speak at the Royal Society of Medicine in 2020; In 2015 van Teijlingen presented at Social Science Baha (Kathmandu) on research capacity building in Nepal.