

Recognition of health informatics in Australian standard classifications for research, occupation and education

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Abstract. Work on building a strong research base, a skilled workforce and an accredited learning and development system in Australian Health Informatics is not mature. This paper aims to explore how such work is supported at a fundamental level, that is, within formal systems for identifying fields of research, occupation and education in Australia. The researchers examined the treatment of Health Informatics and related terms in a range of relevant Australian standards. We found that Health Informatics has somewhat inappropriate recognition in the formal systems defining research in Australia, a tenuous presence in those describing education, and none in those describing occupations. We argue that our findings provide the evidence base for decisive action to benefit not only individuals but also the wider Australian community.

Keywords. Health Informatics, classification, education, research, occupation, coding

Introduction

Health Informatics is well established as a domain of knowledge, a professional occupation and a field of education internationally [1, 2]. In Australia, Health Informatics has been an active field of endeavor for decades [3, 4] and focus has been renewed in recent years in connection with the national agenda for health reform [5].

Yet work on building a strong research base, a skilled workforce and an accredited learning and development system in Australian Health Informatics is not yet anywhere near maturity [6, 7, 8]. There may be structural factors that offer some explanation as to why this is so.

This paper aims to review one type of structural factors. It examines how work towards appropriate recognition of Health Informatics in Australia – its existence as a body of knowledge and its socio-economic contribution – is supported at a fundamental level, that is, within formal systems for identifying fields of research, occupation and education at the national level.

1. Method

Researchers identified a range of relevant Australian standard systems for research, education and occupation publicly available online. The current version of each was searched using document ‘Find’ tools for any occurrence of the following terms:

‘biomedical informatics’, ‘clinical informatics’, ‘e-health or ‘e-health’, ‘health informatics’, ‘health information’ (including management, science, systems and technology) and ‘medical informatics’. Each occurrence was read and analysed to determine its significance. Manual inspection using expert knowledge was also done to identify additional relevant terms, e.g. ‘health 2.0’, ‘medical Internet’, ‘telemedicine’. The general term ‘informatics’ and the specific term ‘bioinformatics’ were excluded.

2. Findings

2.1. Recognition of Health Informatics as a Field of Research

The two key places to capture Australian Health Informatics research are the Australia and New Zealand Standard Research Classification and Excellence in Research for Australia.

2.1.1. Australia and New Zealand Standard Research Classification

The Australian and New Zealand Standard Research Classification (ANZSRC) is developed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia and New Zealand, in businesses, universities, tertiary institutions, national research institutions and other organisations. It comprises a set of three related classifications: Type of Activity (TOA), i.e. pure basic research, strategic basic research, applied research, experimental development; Field of Research (FOR), previously known as Research Fields, Courses and Disciplines (RFCD) codes; and Socio-economic Objective (SEO), which categorise R&D according to the intended purpose or outcome of the research, rather than the processes or techniques used in order to achieve this objective. The current version of ANZSRC was released in 2008. [9]

The main ANZSRC Field of Research which identifies Health Informatics is a sub-group of Information and Computing Sciences research: DIVISION 08 INFORMATION AND COMPUTING SCIENCES > GROUP 0807 LIBRARY AND INFORMATION STUDIES > 080702 Health Informatics. Two other ANZSRC Fields of Research relate to Health Informatics, a sub-group of Medical and Health Sciences research and a group of Engineering research: DIVISION 11 MEDICAL AND HEALTH SCIENCES > GROUP 1117 PUBLIC HEALTH AND HEALTH SERVICES > 111711 Health Information Systems (incl. Surveillance) and DIVISION 09 ENGINEERING > GROUP 0903 BIOMEDICAL ENGINEERING.

2.1.2. Excellence in Research for Australia

Excellence in Research for Australia (ERA) is an assessment system used by the Australian Research Council to give a detailed, discriminating view of the quality of research conducted at Australian universities. ERA measures performance within each discipline at each university, based on ranking the calibre of journals and conferences in which their research is reported. The current version of journal and conference rankings, finalised by panels of high-level research experts across broad disciplines, was released in 2012. However public consultations are open now on the draft 2015 lists. Completeness and accuracy of draft list items and rankings of their calibre have not yet been determined. [10]

List items are associated with 2- or 4-digit FOR codes only, making it impossible to link them to the primary FOR code for Health Informatics (the 6-digit code 080702). The journals and conferences that appear most directly related to Health Informatics in the draft 2015 list are as follows: American Medical Informatics Annual Fall Symposium, Asia Pacific Association for Medical Informatics Conference, BMC Medical Informatics and Decision Making, Cancer Informatics, CIN: Computers, Informatics, Nursing, E-Health International: the journal of applied health technology, Electronic Journal of Health Informatics, Health Care and Informatics Review Online (aka Healthcare and Informatics Review), Health Informatics Conference, Health Informatics Journal, Health Information and Libraries Journal, Health Information Management Journal, Informatics for Health and Social Care, Informatics in Primary Care, IVBi: Information Visualisation in Biomedical Informatics Conference, Healthinf: International Conference on Health Informatics, International Journal of Functional Informatics and Personalised Medicine, International Journal of Healthcare Information Systems and Informatics, International Journal of Medical Engineering and Informatics, International Journal of Medical Informatics (aka Journal of Medical Informatics), Journal of Biomedical Informatics, Journal of Medical Internet Research, Journal of Telemedicine and Telecare, Journal of the American Medical Informatics Association, Medinfo: World Congress on Medical Informatics, Online Journal of Nursing Informatics, Open Medical Informatics Journal, Studies in Health Technology and Informatics, Telemedicine and e-Health.

2.2. Recognition of Health Informatics as a Field of Occupation

We examined three avenues to categorise the workforce and industry sectors in Australia for evidence of Health Informatics as an occupation.

2.2.1. Australian and New Zealand Standard Classification of Occupations

The Australian and New Zealand Standard Classification of Occupations (ANZSCO) is used in the collection, publication and analysis of occupation statistics within the Australian and New Zealand labour markets. It is used also to capture occupation information in all visa, settlement and citizenship programs. It was developed jointly by the Australian Bureau of Statistics (ABS), Statistics New Zealand and the Australian Government Department of Education, Employment and Workplace Relations (DEEWR). The current version was released in 2013. [11] ANZSCO makes no mention of Health Informatics or related terms.

2.2.2. Australia and New Zealand Standard Industrial Classification

The Australian and New Zealand Standard Industrial Classification (ANZSIC) has been developed for use in both countries for the production and analysis of industry statistics. The 2006 edition reflects a substantial review of all facets of the classification. [12] ANZSIC makes no mention of Health Informatics or related terms.

2.2.3. Australian Taxation Office Salary and Wage Occupation Codes

Australian Taxation Office (ATO) Salary and Wage Occupation Codes are used to describe and code occupations as accurately as possible in individual tax returns. In addition, the ATO provides the ABS with aggregated client records for the preparation

of national accounts and related economic surveys. The current version of these codes was released in 2013. [13] These codes do not specify Health Informatics. They specify one related occupation, that of Health Information Manager (224213). More generally, within the Scientist category (including for example Biochemist, Life scientist, Physicist) there is no Information Scientist specification.

2.3. Recognition of Health Informatics as a Field of Education

A high-level scheme and a taxonomy targeting one educational sector serve to illustrate the status of Health Informatics in Australia's national education and training system.

2.3.1. Australian Standard Classification of Education

The Australian Standard Classification of Education (ASCED) is used in the collection, storage and dissemination of statistical and administrative data relating to educational activity undertaken in Australia. It is organised into 12 broad, 71 narrow and 356 detailed fields. The current version of these codes was released in 2001. [14] Health Informatics and related terms do not appear in ASCED.

2.3.2. National Register on Vocational Education and Training in Australia

As part of Australia's national vocational education and training (VET) system the Registration and Course Accreditation Bodies (RCABs) and the Industry Skills Councils (ISCs) jointly maintain a register which contains the authoritative information about recognised training products and registered training organisations as required in national and jurisdictional legislation within Australia. Its taxonomy of qualifications and occupations according to industry sectors includes both 'health' and 'information and communication technology' (ICT) high-level categories. [15]

Health Informatics is not mentioned at this or more detailed levels in this taxonomy. There are two related nationally accredited courses: Course in Sharing Health Information (15202NT), not current; and Course in Telehealth Consultation (10153NAT). There are nationally recognised units of competency in the related areas of clinical coding and e-health in the Health Training Package (HLT707).

3. Discussion

This section draws out the essential implications of these findings and offers some exemplars from other countries against which Australia could compare or benchmark its treatment of Health Informatics.

Health Informatics has some recognition in the formal systems defining research in Australia, however it is unlikely that most researchers in the field think their work is best described as a sub-group of Library and Information Studies. Cognate informatics disciplines have fared better; for example, Bioinformatics is included in FoR Group 0601 Biochemistry and Cell Biology, and Cheminformatics in FoR Group 0304 Medicinal and Biomolecular Chemistry. The ranking of research outputs and thus the research performance measures that Health Informatics researchers are able to achieve relative to researchers in other disciplines has been low in the past and is unclear at present. A research exemplar: The Canadian Institutes of Health Research (CIHR), the

Federal funding body for health research in Canada, made up of 13 institutes, is explicit and distinct about informatics in its key information materials: “We promote collaboration among researchers from all disciplines, from the social sciences to biomedicine, informatics and engineering.” As well, its Health Services and Policy Research Institute nominates “Health information: e-Health Innovations” as a strategic priority. [16]

Based on official classification and coding schemes Health Informatics is not recognised as an occupation, industry labour force or source of income tax revenue in Australia. While the last of these might seem appealing, it is poor compensation for the sense of being an inexplicable or invisible man or woman that is experienced by people in Australia who have worked in this field, some for decades. An occupation exemplar: The UK National Occupation Standards (NOS) database, covering competencies and performance improvement initiatives for all industry sectors in the UK, includes 22 national occupational standards for Health Informatics. [17] The custodian of these standards and of a well-developed health informatics careers framework is the NHS Informatics Service. [18]

In terms of education, Health Informatics related activities have a tenuous foothold in the recognition of post-secondary vocational education and training. However Health Informatics is altogether absent from the broader classification system applied in education nationally. This has implications for the visibility, credibility and marketability of tertiary study programs offered by Australian providers. Education exemplars: The United States Department of Education’s Institute of Education Sciences National Center for Education Statistics, in its Integrated Postsecondary Education Data System, Statistical data and Information on Postsecondary Institutions, includes ‘Medical Informatics’ (Classification of Instructional Programs Code 51.2706). [19] The Norwegian Standard Classification of Education includes the category ‘754129 Master degree, health informatics, two-year’. [20].

4. Conclusion

The reasons for the current status of Health Informatics recognition may vary, and some may not be specific to Health Informatics. By world standards Australia’s population and economic base is not large or diverse, and this limits the economy’s capacity to sustain highly specialised activity not just in health and in ICT, but in any industry sector. The sustainability of entire healthcare systems is under stress in economies around the world; from interprofessional practice or organisational systems perspectives, new and greater recognition for Health Informatics may seem to threaten the recognition now received by other communities of practice or change agents.

Whatever the reasons, we argue that our findings provide the evidence base for decisive action by a coalition of organisations which identify with the Health Informatics community, to improve national systems and structures to better recognise Health Informatics. The key elements of an action plan will be a task force within the Health Informatics community that is able to work collaboratively and communicate clearly; and an effective mode of ongoing engagement between this task force and influential figures in national research, occupation and education standards portfolios in health and in ICT. An important step forward is the very recent revision of Australian Standard 4846 to include Health Informatics occupation codes [21]. Lessons can be drawn too from other domains where recognition has been achieved in the past decade.

Clearly there will be benefits, if such concerted efforts lead to an integrated policy response to Health Informatics, for the individuals whose education, research and practice activities become better recognised. More importantly, there will be benefits to the wider Australian community. International evidence [22] shows that without an identifiable specialised workforce whose skills are grounded in this established domain of knowledge and practice, Australia is unlikely ever to achieve optimal safety, quality or efficiency outcomes from its investments in technology and systems for data, information and knowledge management in healthcare and biomedicine.

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