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An Exploration of the Certified Health Informatician Australasia (CHIA) Participants

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Abstract. The Certified Health Informatician Australasian (CHIA) is an assessment of a candidate's capabilities measured using a core set of health informatics competencies. The aim of this paper is to describe the outcomes of the first eight years since the program's launch. This paper contributes to the competency framework and certification discourse, and knowledge of the increasing importance and recognition of health informaticians through certification. An analysis of results and possible contributing factors is discussed.

Keywords. Health informatics, digital health, certification, examination, workforce

1. Introduction

Certification examinations in health professions have long been established as a sound method for determining that an individual meets a minimal level of competency, typically assessed against a set of standards determined by a professional credentialing body [1-3]. The launch of several certification programs internationally in the discipline of health informatics and the need to address the lack of formal recognition of local knowledge and skills in this area was the impetus for the establishment of the Certified Health Informatician Australasia (CHIA) examination program [4-5].

The CHIA program was launched in 2013 as a 150-minute online examination comprising 104 multiple choice questions, with a pass requirement of 65% and a maximum of two attempts in an enrolment within 90 days of registration. A committee of academic and industry experts developed the question bank, based on the established set of core health informatics competencies, and subsequently met twice a year to review the existing question bank and develop new questions reflective of developments in practice. In response to the increased workforce demand, due in part to the global COVID-19 pandemic escalating digital health options, the eligibility requirements were

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changed in September 2020 from three years of associated health experience to six months for those with a degree, and from five years of associated health experience to three cumulative years for participants with no degree.

As CHIA approaches its first decade, the aim of this paper is to present an analysis of the participants, drawing conclusions about the cohort and the program evolution.

2. Methods

An analysis of all applicants who undertook a CHIA examination between 1 January 2014 and 31 December 2021 was undertaken. All de-identified applicant data for this time period was extracted from the CHIA database. Other variables extracted for analysis included the date of registration, date of first and (if applicable) second attempt, score at each attempt, state/territory and (where not Australia) country of residence, professional background, and enrolment type (individual versus organisational). A descriptive analysis was undertaken to examine trends in the data over time.

3. Results

3.1. Demographics

The majority of the 2,085 CHIA participants were from the hospital industry (43%), were employed in a healthcare professional role (41%), and held a clinical educational qualification (46%), of which 42% comprised nursing or midwifery, 30% medicine, and 17% pharmacy (Figure 1). Twenty percent of participants identified their role as a health informatician or within a digital health context, and only 2% listed a health informatics qualification (Figure 1).

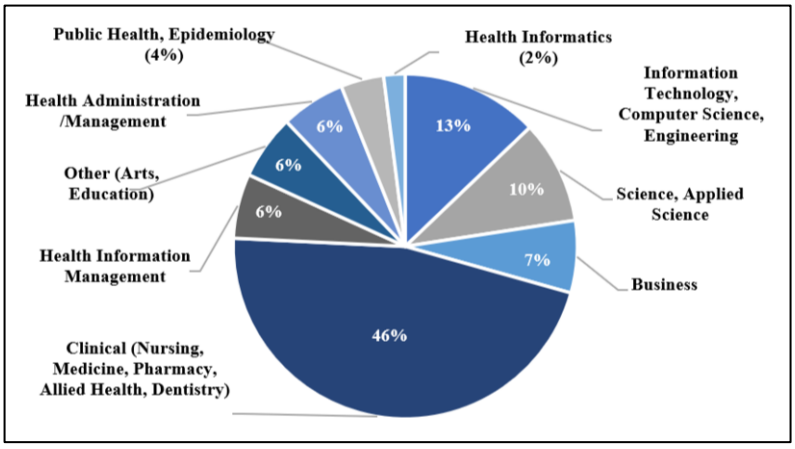

Figure 1. CHIA participants by educational background.

Over 80% of the participants were from the eastern states of mainland Australia, 3% were from 15 countries outside of Australia (predominantly from New Zealand), and nearly two thirds participated through organisationally-funded programs.

Lastly, participants were asked to identify the reason for undertaking the CHIA examination, initially via free text and categorised via interpretation into five categories, and later by a fixed menu of these categories that coincided with the timing of the eligibility requirement modification. Prior to September 2020, gaining knowledge and improving skills accounted for 42% of participants, followed by formalising qualifications (20%), relevance to their job role (18%), and professional development (14%), whereas following the introduction of the fixed menu, professional development was reported by 40%, gaining knowledge and improving skills by 26%, relevance to their job 16%, and formalising qualifications by 15%.

3.2. Examination Results

Overall pass rate results have steadily improved over the eight years, with the first four years averaging 56%, the next two years increasing to 64%, and the final two years reaching 67% (Figure 2). The overall fail rate has decreased in the last two years and the forfeit rate has decreased in the last four years (Figure 2). Following the eligibility criteria requiring less experience years, the pass rate increased from 64% (2014 to September 2020) to 69% (September 2020 to December 2021).

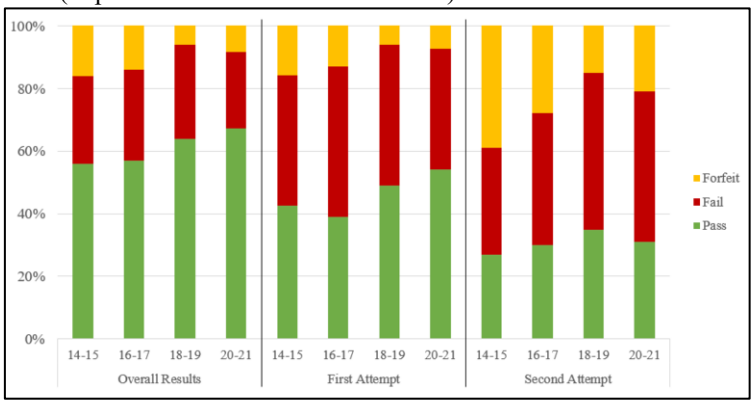

Figure 2. Examination results for years 2014 to 2021, overall and by attempt.

The results from first examination attempts for 1803 participants during the first six years indicate that the pass rate was between 45 and 52%, however this increased to 59% following the eligibility criteria widening. During 2020-2021, 41% of examination takers scored 65-74%, 30% scored 55-64%, 12% scored less than 54%, and 18% scored more than 74%. Results for participants undertaking their second attempt have had not been influenced by the criteria widening, with 31% passing over the eight years, 45% failing, and 24% forfeiting the examination opportunity. The results from second examination attempts for 762 participants overall for the eight years revealed 32% scored 75-74%, 40% scored 55-64%, 19% scored less than 54%, and 8% scored more than 74%.

3.3. Examination Results by Weeks since Registration

A third of participants undertake their first examination in the 12 or 13th week following registration, achieving 52% and 43% respectively, however those who complete the examination in weeks three or six score 79% and 78% respectively. Overall, participants who undertake the examination during the first seven weeks score higher (68%) than

those who sit the examination in the later seven weeks (54%). Participants undertake their second examination mostly in the 13th week following enrolment (61%), followed by longer than 13 weeks (15%), and week 12 (12%). In relation to examination outcome, week 13 has the lowest success rate (34%), followed by week 8 (40%), and week 10 (42%). In fact, the only weeks that participants have a higher success rate were 1 (100%), 7 (71%), and 9 (70%).

3.4. *Examination Results by Days between Attempts*

Following an unsuccessful first attempt, participants frequently undertake the second examination within seven days (40%), within eight to 14 days (19%), and 15-21 days (17%). Six percent undertake the second examination less than 24 hours following the first attempt. Of the 41% successful second examination attempters, 78-84 days later resulted in a 100% pass rate, 64-70 days later 80% pass rate, and 50-56 days later a 75% pass rate. The lowest pass rate was demonstrated in 57-63 days later (33%), 15-21 days later (36%), and within 24 hours of the first attempt (37%).

3.5. Examination Resit Attempts

Of the participants who failed or chose not to sit one or both attempts in their original enrolment, 147 (7%) chose to enrol in a resit at least once, giving participants a further 90 days and two attempts at the examination. Of these participants, 59% passed, 35% did not pass, 14% sat all their available attempts, 21% chose to forfeit one, two, or three of their four attempts, and 6% forfeited all their attempts. There were 14 participants who enrolled in two additional resits after their original enrolment, of which 50% passed. A further six participants enrolled in three to five resits after their original enrolments, with only one passing and the other five forfeiting at least two of their attempts across all their enrolments.

4. Discussion

The improving overall pass rate is probably indicative of increasing familiarity with digital health systems and greater support by organisations for staff to understand and acquire these capabilities. Excluding 2016-2017, the pass rates for those who attempted the examination (n=1803) have been relatively consistent (averaging 54% for first attempt and 41% for second attempt). The lower rate on the second attempt suggests that those that fail on a first attempt are also more likely to fail on the second attempt. This data also supports advice to participants to allow two or more weeks of study before attempting a second attempt.

Location of participants is notable for the disproportionate number from the eastern states of Australia. This is most likely a reflection of the widespread electronic medical record adoption by healthcare organisations in these states. Implementation of such digital systems has identified the need for staff qualified in digital health capabilities to support this transition.

There was concern that broadening the acceptance criteria in 2020 would see a reduction of the pass rate in this new cohort with less direct experience, however the first attempt pass rate increased by 10% and the second attempt pass rate remained unchanged. One factor to consider is the new cohort undertaking CHIA under the broadened criteria

had less experience because they were more recently graduated and had more recent experience in study and assessment than more experienced participants. Unfortunately, this cannot be confirmed as data regarding time since graduation is not collected from participants. This change also needs to be considered by organisations, given investments in training support for participants may include workshops, online podcasts, and stronger supervision of participants by some organisational coordinators. This may have positively impacted the performance of such participants.

5. Conclusions

CHIA has evolved to be a premier program in the certification of health informaticians in the Australasia region. Over the last decade, it has grown to become an employer choice in some Australian jurisdictions, and its evolution is testament to the agility of the program to meet current and future workforce needs. Given two-thirds of participants have an educational background in a clinical, information technology, computer science, engineering, health information management, or health informatics fields, the CHIA credential is sought after by the specialist digital health workforce. Yet, the statistics shared here demonstrate it is not a simple, easy examination, but a comprehensive assessment of an individual's knowledge about health informatics. Lessons for participants can be gained from the data shared in this article, such as when to undertake the first attempt after registration and the benefit of allowing at least two weeks between examination attempts. Ongoing analysis of the program data is required to monitor the impact of recent changes to the program and evaluation of the recertification process is recommended. As the demand for knowledgeable and skilled health informaticians increases in the digital healthcare ecosystem, it is highly recommended that the career impacts by the CHIA program be monitored, categorised by those who certify, those who do not, and those who recertify.

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