The need for an official statistical analysis of outcomes in the General Pharmaceutical Council's annual Registration Assessment

"A little knowledge is a dangerous thing." Alexander Pope.

The General Pharmaceutical Council (GPhC) is the regulatory body for pharmacists, in Great Britain. Its remit includes ensuring that only individuals who meet specific standards can be entered on the Register of Pharmacists. To be eligible for registration, UK-based students must complete an accredited Master of Pharmacy degree followed by a 52-week foundation training year before passing the GPhC's Registration Assessment, which tests clinical knowledge, the application of science, and ethical decision-making. Each year, the GPhC's Board of Assessors presents a report to update the Council on candidate performance in the Registration Assessment. This contents of the report are published in an abridged form by the GPhC on its website, which is invariably picked up by the media. The report contains basic descriptive statistics, including: the total number of candidates sitting the assessment; the overall pass rate; and pass rates stratified along common intersecting demographic boundaries, such as sex, ethnicity, university attended and foundation training sector. The presentation of these statistics is such that it implies a causal relationship between individual demographic characteristics and success in the Registration Assessment. That is to say: descriptive statistics are presented as if they are inferential. For example, the pass rate for *White: British* candidates (91%) is reported alongside that for *Asian or Asian British: Pakistani* candidates (68%) in the 2024 assessment without qualification. No analysis of any kind is carried out to determine if this numerical difference is statistically significant, nor is any attempt made to see how intersectionality may affect candidate performance by highlighting how overlapping demographic identities such as race and gender can create unique barriers to entry.

This poor presentation of raw data and lack of analysis is most deleterious in the reporting of pass rates as a measure of the relative quality of the universities delivering accredited pharmacy degrees. Every year, the report places the blame for poor performance squarely on the shoulders of individual schools of pharmacy and

outlines past and future “interventions” aimed at improving pass rates for those individual schools. In 2022, for example, the school with the lowest pass rate among its graduates was highlighted by name. The 2023 report made specific reference to three schools “whose pass rate was concerningly low”, and to three others for which “pass rates … are a cause for concern.” In 2024, it was noted that “pass rates for some schools are noticeably low in this sitting.”The focus of the GPhC remains trained on schools of pharmacy at the expense of other factors. Its own data shows a 21% difference in the pass rates for students who had completed their training in hospital (89%) and community (68%) settings, respectively. Again, no further analysis of this difference is undertaken. When it comes to ethnicity and postgraduate training, the Board of Assessors does not dwell on performance differences: however, when it comes to universities, it is clear where it believes the fault lies.

This finger-pointing has, in recent years, been picked up on by the media, which has been quick to emphasise the perceived difference in quality of the UK’s pharmacy schools. In consecutive years, the *Chemist+Druggist* has used GPhC data to produce league tables with the titles, *Which pharmacy schools smashed the registration assessment?* and *Which pharmacy schools aced the June 2024 registration exam?* These articles have included phrases like “ranked highest”, “on the other end of the spectrum” and “the worst performing [sic] pharmacy schools”, while drawing particular attention to the GPhC’s schools-directed interventions. The flimsy claim that they are “crunching the numbers” is only true if *to crunch* means to copy verbatim from the public report. This type of theatrical reporting of raw data is to the detriment of the profession and those seeking to join it.

Analogous assessments are in place for other healthcare professions. Passing the Prescribing Safety Assessment (PSA) is a requirement for UK-trained doctors wishing to register with the General Medical Council (GMC). Since 2014, all publicly funded undergraduate medical schools in the UK have provided their students with an opportunity to complete the PSA before graduation. Aggregated data on pass rates is shared with medical schools and the GMC. This data is not used by the GMC or the press to rank the quality of medical schools.

If the GPhC are to publish assessment statistics. it is essential that the data are properly analysed before being presented to the public. This must be affected by

those with full access to the data. Attempts by third parties to obtain these data under the Freedom of Information (FOI) Act are thwarted by the UK General Data Protection Regulation (GDPR) as implemented by the Data Protection Act (DPA). The DPA defines personal data as any information relating to a living individual who can be identified, directly or indirectly, in particular by reference to an identifier. In a group of 2,776 examination candidates, a single identifier such as sex would not meet the definition of personal data if – as in the case of the 2024 assessment – approx. 30% were male and 70% female. However, introducing additional identifiers, such as ethnicity, university attended, foundation year sector, and age iteratively reduces the number of applicable candidates until one can be identified. At this point, the information becomes personal data. So, for example, disclosing that all female, Chinese students who attended a specific university and completed their foundation year in community pharmacy passed their assessment would constitute an unlawful disclosure if there were only one such student. The Information Commissioner's Office (ICO) has the power to issue a monetary penalty for infringements such as failing to secure personal data.

The GPhC, while generally cooperative in respect to FOI requests, are legally bound by Article 6(1)(f) of the GDPR to balance "the legitimate interests pursued [by researchers]" with "the interests or fundamental rights and freedoms of the data subject." To mitigate against the risk of disclosing personal data, the GPhC's policy is to withhold category information from FOI requests where fewer than ten data subjects are in that category.

A discrete data set obtained by the author to compare the combined effects of choice of university *and* foundation year on pass rate contained data for just 1,723 of the 2,776 candidates who were assessed in 2024. Data sets comparing ethnicity with each of the other variables contained no data for any candidate identifying with Chinese ethnicity, though 134 such candidates took the assessment.

Data obtained by FOI request from the GPhC can, of course, be analysed: however, the results cannot, in general, be used to make reliable inferences about the population of candidates due to the extent and nature of the data loss. While it may be possible to determine a relationship between some *individual* demographic variables and exam success, it is not possible to determine the interplay of

intersecting variables, such as ethnicity and sex, or university and foundation training on pass rates without access to a complete dataset.

Previous research has relied on data made publicly available data, whether from the GPhC website or by FOI request. Kavanagh et al. were able to assert that, between 2011 and 2024, candidates were more likely to pass following hospital rather than community foundation placements.Further, they found no correlation between the numbers of students that graduate from a particular university and the pass rate, but did note a correlation between passing rates and A-level grades.This reflects assertions made by the Guild of Healthcare Pharmacist (GHP) in their 2015 report, which – again – was completed using publicly available data obtained under the FOI Act, and is in good agreement with our own findings.

Like Kavanagh, we obtained A-level grades for MPharm programmes from the Universities and Colleges Admissions Service (UCAS). By grouping the 34 universities included in the GPhC's report into six ranked categories corresponding to the mode grades held by students upon acceptance to each (AAA, AAB, ABB, BBB, BBC, and BCC), we were able to demonstrate that prior academic achievement was an effective predictor of success in the GPhC assessment in 2022 ($\chi^2 = 109.689$, $V = 0.226$, $p < 0.001$), 2023 ($\chi^2 = 71.657$, $V = 0.191$, $p < 0.001$) and 2024 ($\chi^2 = 84.819$, $V = 0.208$, $p < 0.001$). Candidates with higher entry grades consistently achieved better pass rates than those admitted with lower grades. Intra-group analysis revealed only minor variations in exam performance across most grade groups, indicating pass rate in the GPhC assessment mirrors the academic level of the student intake, with little added influence from institutional factors and effects. These outcomes highlight the flaws in the way the GPhC present their data and the press report on it, inviting confirmation bias regarding the relative quality of UK universities to fill gaps in the analysis.

None of this research has made – or, indeed, could make – any assertions regarding how the various variables interact to affect exam performance due to the huge loss of data dictated by the DPA. The intersection of sex and foundation training, or A-level attainment and ethnicity in predicting exam success cannot be examined in a meaningful way without a complete dataset. School-leavers may reasonably wish to know if any disadvantage of attending a university with a lower entrance requirement is offset by undertaking foundation training in a secondary care setting. As tuition

fees and the associated student debut become increasingly relevant considerations, a student carrying AAB grades may have to decide whether to move away to a school with higher entrance qualifications or remain at home and study at a local school with lower entrance requirements. All information on how that decision may affect their eventual entry to the profession should be in the public domain if available.

Evidence suggests that entry into high-status occupations is still skewed in favour of those from privileged family backgrounds. Recent research suggest that students from black, minority and ethnic (BME) groups may actually have a significant “value-added” advantage by attending universities with lower entry-requirements, which are better positioned to provide support for candidates from underrepresented backgrounds, broadening access to the professions and enhancing social mobility. A school with a 75% pass rate from a BCC intake, for example, may have delivered a greater educational uplift to its cohort than a school with a 90% pass rate from exclusively AAA entrants. Ranking universities solely on raw pass rates overlooks this important contribution. Furthermore, the move towards multi-sector foundation year training will increase the number of combinations of universities and foundation providers in that data, increasing the complexity of choices available. It is important that a robust methodology for comparing the outcomes associated with each combination are analysed in full.

The data to address these, and similar, uncertainties has already been collected. All that remains is for it to be analysed and published to foster a better understanding of intersectionality, and thus ensure that future interventions address the needs of both candidates and the providers of education and training.

Since no independent body can obtain these data in their unredacted form, the GPhC must either undertake this analysis internally or commission a statistical service to do it. In the 2023 report, its Director of Education and Standards expressed the intention to “produce a more comprehensive report and analysis”.The time has come for this to be acted upon.

This is a unique opportunity for the regulator to drive data-driven decision-making in their efforts to ensure that performance in the Registration Assessment is

maximised, and to empower students to make the best choices on their journeys to registering as pharmacists.

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