

PATIENT EXPERIENCE SURVEY:
MEDICAL SCHEMES' BENEFICIARIES LIVING WITH DIABETES
2019/2020



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Policy, Research & Monitoring

Senior Policy Analyst, Policy Researcher & Monitoring:

Phakamile Nkomo p.nkomo@medicalschemes.com

Researcher, policy Research & Monitoring:

Martin Moabelo

General Manager, Policy Research & Monitoring:

Michael Willie m.willie@medicalschemes.com

Acknowledgements:

Executive Personal Assistant, Policy Research & Monitoring:

Busi Khuzwayo (*survey response follow-ups*)

EXECUTIVE SUMMARY

I. Prologue: Patient Experience Surveys Strengthen Our Regulatory Standing

Guiding vision for healthy communities

Equality issues related to accessing disease management programmes are covered in the current regulations to the Medical Schemes Act (MSA). Regulation 8 to the Medical Schemes Act describes the circumstances relating to the conditions of service access and financing of prescribed minimum benefits (PMBs). In fact, Regulation 8(4) guides the basis of access to PMBs by specifying that the conditions for access should not preclude considerations pertaining to the principles of efficiency and effectiveness.

Regulation 15(1)(a) of the Medical Schemes Act requires managed care contracts to list the terms of such managed care arrangements. The definitions to Regulation 15 are also clear that the term “protocols”, extends clinical practice guidelines.

Effectively, access to clinically effective healthcare is not the only component of quality in healthcare. Being responsive to patient experiences, is so crucial that it has become a critical component of health planning in the National Health Services (NHS) in Britain. Implementing responsive policy interventions that place beneficiaries’ perspectives into accreditation standards, will introduce managed competition to the managed care market.

Patient Reported Patient Experience Measures (PREMs) surveys are done to place patients/consumers at the centre of healthcare financing and purchasing. The PREMs allow a patient centered approach to health service purchasing. Further to this, the patient experience and patient empowerment scores derived from quantifying and indexing survey participants’ responses, can be used for conducting economic analyses on the effectiveness of patient-provider engagements in the health delivery process. Patient experience surveys are critical to achieving a responsive health financing and delivery system. More importantly, PREMs enable the implementation of consumer directed managed competition interventions, which empower the consumer in decision making. The empowerment occurs by disseminating PREMs survey results to consumers.

We argue that patient centered care in the demand side of the private health market, should be furthered guidelines of the regulations. Therefore, managed care contracts should reflect how patient empowerment and patient experience are to be realised in disease management programs for non-communicable diseases. Effectively, this should include the evaluation processes and controls that give effect to patient empowerment. Namely controls that will enable patient activation, patient self-management, and patient psychosocial self-efficacy. These three criteria or controls should be developed as part of the accreditation standards and measurement criteria for managed care organisations (CMS (2020)). These criteria are also the dimensions of patient empowerment scores. These scores should also be made available to medical schemes’ members living with chronic conditions.

Policy relevance of Patient Experience Surveys

During the 2019/2020 review period, the Policy, Research & Monitoring (R&M) unit conducted a patient experience pilot survey on medical schemes' beneficiaries living with diabetes (CMS (2019)). Patient Reported Experience Measures (PREMs) were scored. The psychosocial dimension of the overall patient experience score performed relatively worse than other dimensions.

This finding is important based on our recent learnings about COVID-19. Improving the psychosocial self-efficacy of those living with diabetes will be crucial going forward. Diabetes has been found to be a condition that predisposes and introduces complications to COVID-19 infections. The psychosocial behaviour of those most at risk for contracting COVID-19 has become a critical issue on a global scale.

Behaviour seems to be the overriding factor that determines the outcome of public health adaptation strategies, that are implemented by national governments to retaliate against the spread of the COVID-19 pandemic. Improving the psychosocial self-efficacy of those most at risk (i.e. people living with chronic conditions), should be a focal point of collaboration between the industry and the Council for Medical Schemes (CMS).

The learnings from the Patient Experience Survey should be incorporated in how the Medical Schemes Act Amendment Bill (MSA Bill) implements the Health Market Inquiry (HMI) recommendations. The HMI recommendations require impact assessments on administrator and managed care companies are implemented. The same recommendations require the private health financing sector to bring members to the centre of healthcare purchasing. Disseminating the findings of Patient Experience Surveys will effectively facilitate the process of keeping medical schemes, administrators and managed care companies accountable to medical schemes' beneficiaries.

The MSA Bill needs to effect HMI recommendations through enabling interventions to improve the psychosocial behaviour and self-efficacy of those living with non-communicable diseases. The Patient Experience and Patient Empowerment findings from this report provide policy criteria to realise the HMI recommendations. Accreditation standards can also be extended to provide for patient psychosocial performance criteria for designated service providers (DSPs) and managed care organisation (MCO) networks. Aside from clinical governance and effectiveness, the behavioural issues are critical to the effectiveness of medical schemes' financial outlays on chronic conditions. Behavioural criteria are what will empower consumers/beneficiaries to use disease management programs optimally.

Most importantly, the policy research and evaluation by R&M for policy implementation should take note of the HMI recommendations (Health Market Inquiry (2019)). This could be realized by including the work associated Patient Experience and Patient Empowerment surveys and analysis reports, as the bedrock of enabling

managed competition in the private health financing sector. Dissemination of this work to the public will bring beneficiaries to the center of healthcare and make market entities more accountable to beneficiaries.

Additionally, pursuant to meeting the mission of CMS, which is to regulate in the interest of all beneficiaries, R&M will need to conduct policy monitoring and research to investigate the effectiveness of disease management programs (DMPs) and DSPs. The dissemination of Patient Experience and Patient Empowerment scores can contribute to establishing a quality metrics that speaks to beneficiaries' perspectives.

Ultimately, Patient Experience surveys can contribute to the recommended function of CMS by the HMI. The CMS will need to conduct economic evaluations and cost-benefit analyses in future, in order to:

- i) To conduct value-add or impact assessments of administrator and managed care services, though developing a performance metrics and benchmarks, as per HMI recommendations (reference HMI report)
- ii) Co-regulate with the Competition Commission on competition issues and market conduct:
 - Efficiency issues related to exemptions to the Competition Act's guidance on market power, should surely go beyond the scope of Outcomes Measurement and Reporting Organisation (OMRO). This is because OMRO's regulatory scope will not specifically include the accreditation of health provider services. This will be the role of the Supply-Side Regulator as it takes over the interim function of CMS on practice code numbering system (PCNS). OMRO's purview is on the monitoring of clinical governance/clinical effectiveness. In the interim, this support to the Office of Health Standards & Compliance (OHSC) will have to be provided by the CMS.
 - To be able to conduct economic evaluations, impact studies and cost-benefit analyses, the CMS will have to collect data on managed care contracts. This is also critical for regulating appropriately on the market conduct of market participants, and refereeing tariff determination in multilateral bargaining forums.
 - To comply with the HMI finding of, enabling a health financing environment in which more than 50% of all healthcare delivery mechanisms on benefit option entitlements, to be sourced through health delivery network arrangements.
- iii) Support the NHI Board:

Provide analytical and policy evaluation support to National Health Insurance (NHI) as per the NHI Bill.

Application of Patient Experience Surveys to policy research & evaluation

The R&M unit sought to understand the behaviours of beneficiaries managing their diabetes conditions, such that, positive patient empowerment attitudes could be imputed. Therefore, a diabetes empowerment scale (DES) was developed and implemented through qualitative and quantitative techniques (mixed methods analysis).

The DES framework is a psychosocial empowerment scale for people living with diabetes. The DES uses responses from patient reported experience measure (PREM) surveys as observable variables that describe interpersonal interactions between patients and healthcare providers. Some of these observed variables are what underly the psychosocial efficacy of beneficiaries living with diabetes. These psychosocial responses were scored, and an index was developed to report descriptive results.

The DES framework was used to estimate the treatment effect of beneficiaries self-selecting themselves into the patient empowerment treatment group, on treatment adherence. This is a quasi-experiment (non-random experiment) using observed cross-sectional data to provide a policy evaluation on the outcomes associated with implementing a regulatory policy that strengthens the patient empowerment. The patient empowerment dimensions of interest were: i) patient activation; ii) patient self-management; and iii) patient self-efficacy.

We also decomposed the effects of patient experiences responses on the DES dimensions' outcomes (using an Oaxaca-Blinder Decomposition). This type of analysis is critical for tariff negotiation processes and accreditation of disease management programs to:

- i) Identify inequalities related to policy design or policy gaps associated with the experience of beneficiaries living with diabetes,
- ii) Factor in criteria for favourable re-imbursement methods for remedial steps taken by market participants behaving favourably towards responsive policy interventions, and
- iii) Introduce regulatory standards in the Medical Schemes Amendment Bill that make healthcare interventions through disease management programme DSPs and networks, more equal and equitable for beneficiaries with different characteristics and endowments.

II. Problem Statement

Coordination problem

Allowing beneficiaries living with diabetes to act on decisions arising from a collaborative partnership with healthcare providers, requires a shift from traditional “acute care models” to a patient-centered approach that gives some empowerment to beneficiaries regarding their self-activation and self-management decisions and psychosocial behaviour. Regulatory intervention is required to the effect that; disease management programmes for medical scheme beneficiaries living with diabetes, factor in sustainable quality of care through employing and monitoring patient empowerment outcomes.

Policy research solution

A framework of correcting policy implementation will lead to optimal policy responsiveness by the Council for Medical Schemes (CMS). Such action will increase the CMS credibility particularly at a time when the COVID-19

outbreak has the potential to rampage the provider sector through less patient visits, and thereby reduce treatment adherence and testing. Activating beneficiaries living with chronic conditions that can lead to COVID-19 complications on infection, means that beneficiaries behave with efficacy in self-managing conditions.

A framework for taking corrective policy interventions has been developed by Research & Monitoring (R&M). The framework rests on using patient experience survey responses to develop a psychosocial metric for measuring patient empowerment. The psychosocial metric uses three dimensions for measuring quality in healthcare. This is done by developing patient empowerment measures constructed by using patient experience survey responses. These dimensions are: i) patient activation; ii) patient self-management; and iii) patient self-efficacy. The R&M unit has tested this theory on patient experience survey responses, and the findings are compelling.

From a long term post-COVID perspective:

- i) a lot of disease management programmes are offered by medical schemes through a designated service provider (DSP) or network arrangement; therefore
- ii) a patient empowerment perspective to DSP arrangements, will strengthen quality healthcare outcomes; and
- iii) demonstrate the effectiveness of managed care and DSP arrangements; and
- iv) Disseminating this information to beneficiaries will enable consumer directed managed care interventions that strengthen managed competition in the demand side of private healthcare.

Medical Schemes Amendment Bill

The Regulations to the Medical Schemes Act 131 of 1998 (MSA) point to two critical dimensions that determine healthcare quality among medical schemes' designated service providers (DSPs). These are access and clinical effectiveness. This article will argue that a crucial third pillar has been omitted from the MSA regulations. Specifically, that DSP arrangements for managed care organisations' disease management programs (DMPs), should demonstrate that their quality of care processes affect patient empowerment.

This could be done through provider collaborations between patient and providers. Collaborations that bring the goals and decisions of patient living with chronic conditions to the centre of processes aimed at achieving positive healthcare quality outcomes. Interventions that would be consistent with enabling patient empowerment principles are: i) patient activation; ii) patient self-management; and iii) patient self-efficacy reviews.

Industry Collaboration framework on COVID-19

The collaboration process on COVID-19 will do well to integrate the patient empowerment approach to criteria for tariff negotiations. The effectiveness of managed care interventions could help to reduce complications for COVID-19 infections.

III Purpose

The purpose of this analysis is to extend on the findings drawn from the patient experience pilot survey that was conducted 2019 (CMS (2019)). A salient finding was the relatively lower performance on the psychosocial dimension, compared to the other dimensions of interest of the patient experience survey results. We apply a process-outcome approach to measure patient self-efficacy. Knowledge derived from the initial patient experience report is thus enhanced and goes further than providing mere patient experience scores. Lower performance on the psychosocial dimension can be explained through a patient empowerment measurement construct. A decomposition analysis allowed for identifying on areas for improving the standards and measurement criteria for the accreditation of managed care organisations.

The validation criterion applied for developing the patient empowerment construct is informed by previous literature on diabetes empowerment scales applied to patient centered surveys. We conduct a concurrent analysis comparing the CMS R&M construct to others found in research literature.

We seek to observe a direct association between patient empowerment and treatment adherence, for medical schemes' beneficiaries living with diabetes. Ultimately, the purpose of the analysis is to observe this direct relationship through employing robust estimation techniques on a structural equation model. Endogenous selection bias is dealt with through a weighted propensity score matching treatment on intervention and control groups.

IV. Objectives

The objectives are:

- i) To report patient experience scores of medical schemes' beneficiaries living with diabetes.
- ii) To provide descriptive statistics on self-reported diabetes programme adherence.
- iii) To develop a patient empowerment psychometric scale from patient experience variables.
- iv) To conduct a concurrent evaluation on the empowerment scale tool.
- v) To test the construct validity of the empowerment scale.
- vi) To report patient empowerment scores.
- vii) To conduct a doubly robust quasi-experimental analysis with inverse probability weights to estimate the average treatment effect of patient empowerment on the treated.
- viii) To conduct a Blinder-Oaxaca decomposition on each of the patient empowerment dimensions using patient experience variables as predictors, in order to, prioritise areas for improving accreditation criteria.

V. Methods

The study design sought to link observed responses pertaining to patient activation, patient self-management and patient self-efficacy, with patient treatment adherence behaviour. Patient experience responses from the pilot survey were linked with implicit patient empowerment dimensions, through employing a second-order factor analysis. The construct (psychometric measurement scale) was derived from observed variables from the patient experience pilot survey's responses.

The framework of analysis was based on a diabetes empowerment scale's (DES). The patient empowerment theory finds a causal path postulating that, patient experience measures emanating from shared positive relationships (between patients and health providers), will lead to appropriate treatment adherence outcomes. An appropriate method for determining direct response casual relationships was used, this method is called the structural equation model (SEM) method.

Literature validating psychometric measurement scales for long-term (chronic) diseases have been reviewed. The reviewed literature was used to identify validation criteria for evaluating our survey research output. We used a measurement scale that passes the concurrent validity test. The empowerment measurement scales we reviewed were: i) the **Patient Activation Measure (PAM) scale**; **Partners in Health (PIH) scale**; and iii) the **Diabetes Empowerment Scale (DES)**.

The patient empowerment study's sample size of 4,325 survey participants was sourced from primary data. The primary data was last year's patient experience pilot survey. The sample represents a target population of 303, 847 beneficiaries living with diabetes. The sample calculation found the sample size appropriate enough to **extrapolate** the findings of the study to the experience of the entire target population. We also used **weighted sampling stratification**, to avoid survey bias.

Internal validity was assessed through applying the Cronbach alpha. **Construct validity** was established through implementing a second-order confirmatory factor analysis using **SAS structural equation methods Proc CALIS** procedure. The model fits confirmed compliance with statistical guidelines. That said, the overall theoretical judgement was guided by research literature.

We applied a **quasi-experimental** study design using **doubly robust** estimation methods to the implemented **structural equation model (SEM)**. We implemented the psychometric construct and observed response levels (**direct effects/treatment on the treated effects**) from the respondents that **self-selected** themselves into treatment group.

The SEM analysis sought to eliminate endogenous selection bias by adjusting for the characteristics of patient experience survey responses. Intervention and control groups' participants were balanced in terms of their characteristics. This allowed for the experiment to take on the properties of a randomised control trial, and thus

allowing the findings to be extrapolated to the whole population/diabetes prevalence in the medicals schemes industry. More specifically, on the diabetes prevalent population in medical schemes that experiences positive patient experience and empowerment (average ***treatment on the treated effect***).

Scheme size was also included as an adjuster in the structural equation model. This categorical variable ***adjusted for market competition effects*** on positive outcomes experienced by managed care organisations (MCOs) providing diabetes disease management programs. This allowed for identifying patient centered care interventions from market competition effects.

To be sure, the patient empowerment dimensions effects were decomposed by respondents' characteristics and endowments (using an ***Oaxaca-Blinder Decomposition***). This was done to determine where the benefits and burdens of current designated service provider (DSP) and managed care organisation (MCO) regulations lie.

VI. Findings

The richness in the observed findings is based on implementing descriptive statistical techniques, causal structural equation analysis, and micro-econometric programme evaluation methods to the patient experience survey data. The result is we have eight sub-sections that seek to describe and draw inferences about the state of patient experience for beneficiaries living with diabetes. We then seek to close policy gaps applying patient experience data to the theory of patient empowerment. We hope the inferences we make from the observed data, are of policy significance and will be found compelling to the medical schemes industry and covered beneficiaries. Particularly for beneficiaries those living with diabetes

The findings of the analysis show that the theory that patient empowerment, can explain negligible patient experience scores, holds. Therefore, it is advisable that disease management and network regulations, and accreditation standards are supported by patient experience surveys for chronic diseases. The findings for each section of the results are provided in the sub-paragraphs below.

General characteristics survey sample respondents

A comparative analysis of the distributions of variables in the target population relative to the sample, found that the observations made on the analysis of the sample survey, can be extrapolated to the true population. Therefore, our findings are likely to be true for all beneficiaries living with diabetes in South African Medical Schemes.

The characteristics of the survey respondents for the 2019 and 2020 surveys, were similar. This is a favourable outcome in terms of the validity of the parameters used for the sample size, and the weights for the variables included in the weighted sample schema. For example, the high proportion of Type II diabetes respondents for both sample years, is consistent with the prevalence of Type II diabetes in the true population.

A large proportion of respondents had comorbidities and were within the most at risk age group for contracting COVID-19 complication. So, this would make patient experience surveys critical for assessing the self-efficacy of patients to behave in a manner to mitigate the risks of contracting COVID-19. In fact, only half of those most at risk for COVID-19 complications, receive routine benefits in closed networks. Additionally, just less than half the respondents report not to on lifestyle management programmes. That said, at least 80% of the respondents reported that their diabetes condition was under control.

Marketing material for how general disease management benefits are accessed should be prioritised in Limpopo, Northern Cape, and KwaZulu-Natal, and Northern Cape for accessing routine medication. Managed care networks for accessing disease management programs' general services, should be prioritised in North West, Eastern Cape, and Mpumalanga. For accessing routine medication, North West, Northern Cape, and Gauteng should be prioritised.

Concurrent validity

The literature covered three different measurement scales. These are: Partners in Health (PIH) scale; Patient Activation Measure (PAM); and Diabetes Empowerment Scale (DES).

The measurement scale used in this analysis, was consistent with variables used in diabetes measurement scale literature. The measurement scale is thus consistent with established research literature.

External validity -- ability to extrapolate

The survey responses were 4, 325 and 8, 666 medical schemes' beneficiaries living with diabetes, for 2019 and 2020, respectively. The sample calculator required less responses. Therefore, it can be presumed that the sample represents the true populations. The analysis also makes vital adjustments to the quasi-experimental analysis. These adjustments eliminate endogenous bias introduced by market effects and the effects of beneficiary characteristics.

Construct validity

The analysis includes an exploratory and confirmatory analysis to test the validity of the measurement construct used to measure the patient empowerment scale. The theory holds with three latent variables and nine observable variables.

Internal consistency of measurement scale

The Cronbach alpha was 0.92, with none but one of the nine variables reaching a correlation with the lead index of 0.8. The construct derived to measure patient empowerment is thus validated in terms of face validity and internal validity.

Second-Order Confirmatory Analysis

The second-order confirmatory factor analysis tested the validity of the patient empowerment theory against the patient experience survey data. The goodness-of-fit suggests that the theory holds on an empirical basis. Patient experience improves with patient empowerment, and adherence improves as a result.

Patient satisfaction, patient experience scores and patient empowerment scores

Beneficiaries living with diabetes are generally likely to recommend their disease management programs to others. That said, patient empowerment reduced due to a reduction in the score of 'emotional support'. This means that patient self-efficacy is not improving. Also, although unsatisfied beneficiaries attended more routine check-up, their patient empowerment scores reduced by ten points. This could be as a result of CMS conducting patient experience surveys and publishing the results. This also strengthens the notion that patient empowerment is a process that people living with chronic conditions self-select. It cannot be forced.

Quasi-experimental analysis

The structural equation model's (SEM) results estimated a significant treatment effect for patient empowerment. Patients who had a positive patient experience, which covered the patient empowerment processes of patient activation, patient self-management, and patient self-efficacy; adhered to treatment protocols more than those that did not experience patient empowerment. The average effect of treatment on the treated was 1.42 times more patient visits than those with similar characteristics in the control group.

Decomposition of treatment adherence outcomes

The Blinder-Decomposition identified differences in treatment adherence outcomes. These differences in adherence were explained by comparing the patient experience scores of empowered patients, relative to, patients who are not empowered. The findings suggest priority focus areas for the accreditation of managed care organisations.

VII. List of Recommendations

1. Industry engagement

- 1.1. The methods and findings of this report should be workshopped with the industry, pursuant to initiating a working committee for developing a generic questionnaire for patient experience and measuring patient empowerment dimensions for all chronic conditions.

- 1.2. The process should be led by the R&M unit. That said, R&M ought to elect a panel of experts to facilitate engagement with the industry.
- 1.3. The Council could potentially approach an independent entity to work closely with Health Quality Assessments (HQA) and industry on developing a generic measurement scale questionnaire for patient experience surveys for all chronic conditions. The independent agency should be responsible for driving an independent process for identifying survey questions and establishing criteria for the measurement construct (measurement scale) only.
- 1.4. CMS ought to continue conducting Patient Experience and Patient Empowerment Surveys. Not allowing CMS to continue doing so, and report performance of quality from a beneficiary perspective, will weaken oversight and its ability to implement coordinated policy reforms that impact value-add among administrators and preferred provider networks that are accredited as managed care organisations. The independent agency should only be responsible for developing objective criteria for measurement in the health financing sector. The HMI report specifically requires OMRO to do clinical governance assessments on the supply-side.
- 1.5. The methods and findings of this report should be floated at the Board of Health Funders (BHF) Conference. The policy significance of the findings is that they could inform the implementation of the HMI findings post COVID-19.
- 1.6. The CMS should require medical schemes to distribute information on patient experience survey updates at annual general meetings. We could start developing a pamphlet, and bulletin on disease management programmes for beneficiaries living with diabetes. Once a generic survey questionnaire has been developed, the bulletin could cover non-communicable diseases in general.
- 1.7. A presentation on the patient experience report should be presented during principal officer workshops and roadshows.

2. Council engagement

The methods and findings of the report should be used by Research & Monitoring (R&M) to engage the Council on how patient experience surveys are used to meet at least five of the HMI's recommendations:

- 2.1 To measure quality in medical schemes and provide the public with information on quality from a medical scheme beneficiaries'/patient-centered perspective. This effort will enable consumer directed approach to health financing and foster the mechanisms of managed competition. Thus, embracing the principle of accountability to beneficiaries, and placing beneficiaries at the centre of health financing.

- 2.2 To develop performance metrics to benchmark value-add from preferred providers and managed care organisations that contract with medical schemes and administrators.
- 2.3 To inform the accreditation of managed care organisations that provide disease management programmes, in support of the temporary arrangement of conducting the PCNS function before handing over to the OHSC.
- 2.4 To inform the value of behind the bargaining chamber offers related to managed care interventions in the Multilateral Negotiation Forum (MLNF).
- 2.5 To support on benefit standardisation and simplification for the base benefit and supplementary benefit package. The dissemination of patient experience scores at option level ought to make benefit option choice easier for those living with chronic conditions.

3. Inter-units & RDC engagement

- 3.1 The R&M unit should workshop the results and findings of this report the Accreditation unit to find a way to make this work inform the accreditation of DSPs and networks for disease management programs. Specifically, to develop the measurement standards for accrediting managed care organisations.
- 3.2 The R&M unit should workshop the results and findings of this report with the Legal unit to inform the enhancement of DSP and network regulations for disease management programmes. Particularly, in developing regulatory guidance underpinning the Medical Schemes Amendment Bill.
- 3.3 The R&M unit should workshop the results and findings of this report with the RDC (Regulatory Decisions Committee) to inform the enhancement of DSP and network regulations for disease management programmes.

4. Tariff negotiation framework

The Multilateral Negotiation Forum (MLNF) is a result of the HMI recommendations. It is also critical for the industry collaboration on negotiating tariffs for COVID-19. We provide the following recommendations:

- 4.1 Providing patient experience and empowerment scores to beneficiaries and medical schemes is imperative for dealing with information asymmetry issues in the private health funding sector, and market concentration issues in the supply-side sector. Information asymmetry issues can lead to outcomes that stall the optimal payoffs for all bargaining entities. Information asymmetries could result in market exclusionary outcomes based on market concentration issues, or principal agent problems associated with tariff price bargaining processes.

- 4.2 The HMI concerns regarding vertical relationships between administrators and managed care arrangements makes point 4.1 exceedingly important.

5. Baseline COVID-19 LCBO package

The inter-industry collaboration on COVID-19 presents a window of opportunity for indemnity type financial products that wish to migrate to the medical schemes regulatory environment. This window of opportunity also falls favourably to the CMS to find finality on this issue. The policy problem is that in-house data may not reflect the true business models of indemnity products or bargaining council schemes. Thus, any recommendation or guidance based on the current in-house data may leave a lot of potential market participants out of contention. Therefore, another market competition and coordination issue, on the ground of market entry barriers and unfairness, could be blamed on the CMS. Therefore, we suggest the following:

- 5.1 Indemnity products currently cover dreaded diseases. Perhaps chronic conditions that known to create COVID-19 complications should be a baseline benefit offering.
- 5.2 Products that should are exempted should be given a timeline to adhere to the prescribed primary care package.
- 5.3 These exempted products should also progressively expand benefits based on the market segmentation project for benefit standardisation and simplification.
- 5.4 Patient experience surveys should be used to develop a healthcare network for LCBO disease management.

6. Registration & monitoring of networks

- 6.1 Diabetes disease management programmes should be monitored to assess whether they provide lifestyle management programmes, particularly for age groups that have comorbidities, and are therefore are at higher risk for COVID-19 complications.
- 6.2 Managed care organisations that provide diabetes disease management programs should re-evaluate their health service delivery networks if services for routine care are obtained within open networks arrangements. This is not optimal for coordinated care, which has an impact on the patient experience and patient empowerment. It also falls foul of HMI recommendations, regarding that at least 50% of all beneficiaries need to be on networks.

- 6.3 Marketing and education brochures on how to access health services for diabetes disease management programmes should be made accessible in all provinces. Particularly in Northern Cape for accessing routine medicine.
- 6.4 A high emphasis for improving the self-efficacy of beneficiaries living with diabetes should be included in the registration criteria of diabetes disease management programmes. Specifically, on:
 - 6.4.1 Patient experience processes that lead to positive patient activation.
 - 6.4.2 Patient experience processes that lead to positive patient self-management behaviour.
 - 6.4.3 Patient experience processes that lead to positive patient psychosocial self-efficacy and behaviour.

VIII. Practical Implications

Allowing beneficiaries living with diabetes to act on decisions arising from a collaborative partnership with healthcare providers, requires a shift from “acute care models” to a patient empowerment approach. This patient empowerment approach should spark medical schemes’ beneficiaries to become self-activated and embark on the path of achieving patient empowerment. Patient empowerment fuels sustainable self-management that aids the achievement of effective quality outcomes.

Regulatory interventions ought to be responsive and coordinated. Achieving this will require the CMS to engage in a consultative collaborative effort with the industry to develop a generic patient experience and empowerment survey for all chronic conditions. The outcome should be to enhance the DSP and managed care regulations of the Medical Schemes Act. A beneficiary-centric industry ought to monitor and report performance indicators to beneficiaries with chronic conditions. This will make benefit option choices easier for a cohort of the population that uses a high proportion of total healthcare utilisation. Thus, enabling a consumer directed regulatory responsiveness and managed competition environment in the private health financing industry.

IX. Considerations for Policy Implementation Strategy

Disseminating finding on Patient Experience and Patient Empowerment Surveys for disease management programs, is beneficial for transparency and putting medical schemes’ beneficiaries at the centre of the private health funding and delivery system. According to the Health Market Inquiry findings and recommendations, it is critical that before mandatory standardised base package is implemented and for the completeness of anti-adverse selection interventions, that more than 50% of medical schemes’ beneficiaries receive health services from performance rated healthcare delivery networks. If the contracting and purchasing of in network health services are informed by Patient Experience and Patient Empowerment information, then value-add must be the policy outcome in managed care markets.

Disseminating research findings arising from Patient Reported Experience Measure (PREM) surveys, will go a long way to meeting the HMI recommendations. One such recommendation is that the CMS should develop a performance metrics on the value-add of DSP and provider networks contracted with administrators and medical schemes. PREM surveys report quality outcomes from the perspective of consumers. It is vital that managed competition finds its way to the managed care market in the private medical schemes industry.

This type of valuable work should inform the criteria for registering management care organisations that provide disease management programs. Further to this, PREMs should be used to provide valuable objective information to inform the prospective Multi-lateral Negotiation Forum's price determination outcomes. A window of opportunity has presented itself as the industry seeks negotiate tariffs for COVID-19 healthcare services. This opportunity should be used to test the viability of a primary package that is responsive to the market need for dreaded diseases (non-communicable diseases). Evidence abounds internationally, on how non-communicable diseases have resulted in relatively worse COVID-19 outcomes for communities that are socially-economically deprived.

For PREMs to be used as a source of objective information on the value-add of disease management programs, it is crucial that the industry is engaged to develop a generic measurement scale for chronic conditions. This ought to be a consultative process led by the CMS. This collaborative effort has become urgent as the world discovers that chronic conditions complicate COVID-19 infections.

Further to this, it might be wise to allow indemnity funds seeking to migrate to the medical schemes environment to register chronic disease benefits that would be in line with COVID-19 prescribed minimum benefits. Disease management programs identified for chronic conditions that are known to present COVID-19 complications should be considered as a base package. One is even tempted to recommend that this should be the makings of a base Low-Cost Benefit Options (LCBO) that should have expanded benefits over a period, as an exemption criterion. The prescribed primary care benefit package should be used as a yardstick, in the instant that such LCBO exemptions are sought.

The Competition Commission's recommendation that there should be an OMRO that measures quality health outcomes. The focus of OMRO's data collection and analysis ought to be on clinical quality outcomes. The work should primarily be focused on patients and healthcare professionals as market agents. Thus, OMRO will be predominantly concerned with the supply-side of the private healthcare market. When it comes to patient centered analyses, the measurement techniques mentioned by the HMI recommendations are based on Patient Reported Outcome Measure Surveys (PROMs). PROMs are ordinarily concerned with collecting patient opinions on clinical outcomes. These PROM questionnaires would for example, probe the post health intervention/procedure functionality of a patient after a hip-replacement.

Patient Reported Experience Measure (PREMs) are more focused on the inter-personal inter-action between the patient and the healthcare professional. PREMs are more focused on the relationship than the science of healthcare, in order to achieve a collaborative relationship that empowers the patient to be proactive and participate equally in the health seeking episode. This report shows that when PREM responses are placed within a patient empowerment measurement construct, it becomes easier to identify patient self-activation, self-management and psychosocial self-efficacy dimensions that lead to better treatment adherence and health outcomes. Understanding where to improve interventions for patients with chronic conditions, improves the self-management of conditions which predominantly takes place at home and not at clinical facilities. This realization establishes a needed paradigm shift from 'traditional acute approach' to patient empowerment approaches.

This paradigm shift is amenable to consumer directed policy interventions that are crucial for managed competition. PREMs that can improve patient empowerment for those living with chronic conditions should be used to inform the accreditation standards, and measurement criteria used for the accreditation of disease management programs. The dissemination of Patient Experience and Patient Empowerment results will make the market more accountable to medical schemes' beneficiaries.

The previous HMI findings in 2003/04 left the private health industry without a bargaining chamber for effecting a coordinated price mechanism. This left beneficiaries with dwindling guaranteed cover as health inflation soared. Not allowing the regulator the policy instrument of measuring performance for registering complying market agents and informing consumers; will weaken managed competition in the managed care market. If the regulator does not conduct patient experience surveys, and report on patient empowerment, may result in another market inquiry. In this instance, it is possible that the regulator may be accused of a lack of market coordination again.

X. Future Research

1. Development of generic measurement scale for chronic conditions.
2. To integrate questions on clinical markers for the current diabetes patient experience questionnaire. This will require initiating submissions to have future work cleared with a research ethics board.
3. To start doing work on developing sampling strategies for collecting data at managed care organisation level.

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1. INTRODUCTION

1.1 Background

Lessons learned from COVID-19

What COVID-19 has taught us, is that the model for projecting the growth of the disease is just a model. It cannot tell us or project the behaviour of people in adapting to the threat of COVID-19. The resilience strategies that are related to the ability countries adaptation COVID-19 pressures, lie more in citizens' compliant behaviour than in the behaviourally silent actuarial predictive models. National governments tentatively develop mitigating strategies for relaxing lockdowns with unsteady hands.

The other lesson we have learned about the “new normal” is that bottom-up measures create sustainable solutions to crises such as the COVID-19 pandemic. This is consistent with the modern method of patient-centered approaches to diabetes management programs. Anderson and Funnell (2005) advocate a move from traditional curative approaches, to a collaborative patient empowerment approach. At the centre of the modern methods, is cultivating positive **psychosocial behaviour** and **self-efficacy** among people living with chronic conditions. It is the opinion of Anderson and Funnell (2010) that, people living with chronic conditions make “self-selected” choices about how they self-manage their conditions.

Ultimately, what this means for chronic conditions that could complicate COVID-19 infections, is that the “new normal” for disease management is a new type of mitigation strategy. The mitigation strategy seeks to empower people living with a chronic disease, to **behave** in a more **intrinsically motivated** manner. While they also **collaborate** with their care givers to sustain control of their conditions. Herein lies the policy significance of this document.

This ‘new normal’ should make it clear that there are a host of public health and public management elements that ultimately lead to effective clinical outcomes. Measuring clinical outcomes isn't an end in itself. However, it is merely an evaluation point that feeds back into a manage system. The loop entails elements such as decision support which sparks patient activation (Wagner, 1998). Next health information systems inform responsive health delivery design for effective and integrated delivery networks (Wagner, 1998). Ultimately, **the system unravels with people living with chronic conditions at the centre of the health system.**

From patient experience to patient empowerment

Adaptation is the first step towards mitigation. Adaptation allows systems to remain resilient as a mitigation strategy is being developed to leapfrog from the current trajectory.

When it comes to managing chronic conditions, the value of activating patients -- to become more effective in self-managing their conditions -- is the value added of the modern approach to actualising quality in care. This mantra is consistent with what we are learning about the power of behaviour in dealing with the COVID-19 pandemic. Experts learn from people's behaviour, rather than prescribing the dictates of a mathematical model. The "*past is prologue*" doesn't apply in this context. Instead, a new paradigm must be sought.

Anderson and Funnell (2005) explain that the cause of treatment non-compliance by patients, is often due to the reliance placed on the traditional acute model for treating health conditions. Anderson and Funnell (2005) find this model misplaced when it comes to the management of chronic conditions. The authors argue for the activation of patients by educating them to be more self-reliant in the management of chronic conditions.

The psychosocial aspect of managing chronic conditions requires those living with chronic conditions to self-manage on a daily basis. Aujoulat et al. (2012) advances that sustaining control of chronic conditions requires patients to develop an innate sense of self-confidence and motivation. Self-efficacy is attained through activating patients through making information available, and providing decision support (Anderson and Funnell (2005)).

Therefore, it is important that health regulators become responsive to the needs of people living with diabetes. Health authorities should in the very least begin to acknowledge the virtues in the modern approach of managing chronic conditions. No matter how rooted they are in traditional approaches and training. A paradigm shift in the formulation, implementation and policing of regulations for managed care organisations that operate disease management programs is required.

International experience & patient-centered care

Internationally, there is an interest in bringing patient-centred care to the centre of healthcare policy. Whether it be jurisdictions with national health insurance or voluntary health insurance. Improving the ability of people living with chronic conditions to manage their conditions, means that healthcare expenditure could be controlled, and quality of life gains are achieved in pursuance of both healthcare equity and equality.

Wagner's model for chronic disease care identifies the following components as being essential to managed care (Anderson et al., 2003), (Bodenheimer, Wagner & Grumbach; 2002) and (Wagner, 1998): i) self-management support; ii) clinical information systems; iii) delivery system redesign; iv) decision support; v) health care organization; and vi) community resources.

In the US, patient centered care is fast becoming the engine motoring well-oiled and coordinated mechanisms of efficient consumer-directed demand management markets (Enthoven et al. (2019)). Now more than ever before, patient reported experience measures, are included in patient information portals/exchanges in order to increase patient engagement.

In Britain, patient centered care is at the mainstay of responsive public health strategies. In fact, patient centered care is achieved through patient reported experience, and outcome surveys which feed into the improvement of the National Health Services (NHS) system. McAllister et al. (2012) believe that this type of approach to quality healthcare for chronic conditions, is informed by health systems needing to respond to the psychosocial aspect of achieving treatment adherence. This is because the traditional approach which is immersed in the “paternalistic” acute care model, doesn’t create the intrinsic self-motivation required for mastering self-management routines for keeping chronic conditions under control.

The Dutch health authorities conduct a survey of 140 healthcare indicators which they weight according to a performance index. Among the collected variables are patient-centered care indicators. The results are made available to both healthcare providers and users of the healthcare system. In this way, users of the healthcare system are able to make decisions related to healthcare access and quality, in a way that has an impact on efficient healthcare utilisation and outcomes (RIVM, 2015).

Health Market Inquiry findings

The Health Market Inquiry (HMI) findings point to the lack of placing medical schemes beneficiaries at the centre of healthcare (Health Market Inquiry, 2019). In addition to this, there is minimal transparency on quality of healthcare outcomes. Part of the recommendations are that the CMS ought to conduct research pursuant to producing two annual reports of quality in medical schemes (Health Market Inquiry, 2019). Conducting patient experience surveys is central to meeting this policy recommendation.

Pivotal to making the funding sector beneficiary-centric and transparent, there should be a standardised base package. Before that happens, at least 50% of medical scheme beneficiaries should be accessing healthcare delivery services through performance rated healthcare networks (Health Market Inquiry, 2019). Conducting patient experience surveys that report patient experience scores, is a critical step in the right direction for ultimately providing the public with indexed performance scores on managed care networks.

The HMI recommendations also provide for the need of an “independent” entity for conducted clinical governance analysis, on healthcare provider disciplines and/or practices. This entity will be called Outcomes Measurement & Reporting Organisation (OMRO). OMRO will not be obliged to provide any findings to the Office of Health Standards & Compliance (OHSC) for entity registration purposes (Health Market Inquiry, 2019).

This leaves a void for identified co-regulating agencies (as per HMI report) to fill for registration and market conduct purposes. The identified agencies are the CMS, Competition Commission (the Commission), OHSC and the National Department of Health (NDoH). These agencies should continue to monitor, and police registered managed care organisations. In the interests of keeping managed care organisations accountable and

transparent in terms of regulatory standards. This report provides an analysis of quality in medical schemes, at least in respect to quality in the eyes of beneficiaries living with diabetes.

Carving a niche for CMS within market conduct regulations

Enthoven et al. (2019) advocate the virtues of enabling managed care efficiencies through carefully tailored demand management policies. According to Bodenheimer et al. (2002), this should incorporate elements of the chronic condition model are reflected in a previous section.

Among these elements -- self-management support, and decision support are critical elements of patient centered-care healthcare, which are measured through patient reported experience measures (PREMs). This is critical for activating patients living with chronic conditions. Patient activation is required for the operation of competitive healthcare markets, as activated patients are able to navigate the healthcare delivery system such that the supply side is accountable and effective because of informed users. This is in line with the NHI White Paper's problem statement and the HMI findings.

In addition, clinical information systems are instrumental to effecting responsive health care organisation. This means that health delivery system redesign that is coordinated in such way as to bring patients' rights to the centre of the healthcare system. This is because all healthcare interventions per episode are coordinated. The chances of supply-side induced demand increasing, and duplicating healthcare utilisation costs are thus reduced (waste, and abuse is reduced). This is also in line with the NHI White Paper's problem statement and the HMI findings.

Implementing the Wagner Chronic Care Model (CCM) for managed care interventions (Wagner, 1998) and (Wagner et al., 2001), is how the CMS can increase policy coordinated healthcare financing interventions. For example -- through conducting frequent patient experience surveys and communicating their results to beneficiaries with chronic conditions. In fact, this is how CMS can breach the "quality chasm" (Epstein et al., 2010). Ultimately, the dichotomy between clinical governance and patient-centered care ought to be removed in favour of information dissemination and self-management support (Wagner et al., 2001).

The significance of such a policy intervention is that a considerable proportion of healthcare expenditure is consumed by people living with chronic conditions. The US is a private healthcare insurance environment that is increasing access through community. Thus, the nature of its health financing system is similar in some respects to South Africa's. In the US, 51.7% of the covered population are people living with chronic conditions. Yet 85.8% of health expenditure is consumed by people living with chronic conditions (Gerteis et al., 2014).

A lot of effort is spent on patient experience surveys, in order to, empower medical schemes' beneficiaries to use the healthcare delivery system effectively. This could have an ameliorative effect on the growth of healthcare

expenditure. Patient empowerment needs to be the lynchpin behind demand management policy interventions that seek to make managed care outcomes more effective.

Equity related access to diabetes management interventions

Equality issues related to accessing disease management programmes are covered in the current regulations to the Medical Schemes Act (MSA). That said, access to healthcare is not the only component of quality in healthcare. Being responsive to patient experiences, is so crucial that it has become a critical component of health planning in the National Health Services (NHS) in Britain. Implementing responsive policy interventions that place beneficiaries' perspectives into accreditation standards, will introduce managed competition to the managed care market. This is why Patient Reported Patient Experience Measures (PREM) surveys are done. This ought to bring beneficiaries to the centre of private healthcare. This is why patient experience surveys are critical.

Disease management healthcare networks need to incorporate leanings of what patience experience, and how to empower themselves. This critical for effecting quality in health and reducing healthcare utilisation costs. Blinder-Oaxaca decompositions can explain which elements of patient-centered care need to be improved, to make disempowered people living with diabetes behave like empowered beneficiaries living with diabetes.

There are numerous researchers that have applied the Blinder-Oaxaca decomposition to explain differences in health outcomes between social groups. A lot of the work focuses on how ethnic and language differences impact access to health for those living with diabetes. We will however focus on how inputs from the patient experience process, feed into autonomous patient empowerment behaviour. Thus, resulting in differences in treatment adherence among medical schemes beneficiaries living with diabetes.

Ryan et al. (2008) conduct a Blinder-Decomposition to assess the extent that racial and ethnic differences impact the study group. The authors find that racial and ethnic differences between patients and healthcare providers, override and are more significant than differences related to self-reported diabetes management (Ryan et al., 2008).

Pan et al. (2015) use Blinder-Oaxaca decomposition to decompose factors that are associated with patient satisfaction in the Chinese health market. They find that access to insurance, education, gender and market competition are contributors to patient satisfaction (Pan et al., 2015).

Leung et al. (2018) conduct a Blinder-Decomposition on a patient experience survey of war veteran living with diabetes. They find that unexplained difference in patient experience result more from language differences than treatment adherence. He authors suggest this finding is of programme design significance, at it has an impact on patient retention (Leung et al., 2018).

Significance for responsive policy action

This section will provide a briefly explain how patient experience surveys, and patient activation through patient empowerment could influence the policy trajectory in a positive manner. Thus, elevating CMS's stature as a regulator that implements coordinated policy interventions, that seek to reduce the hazard of regulatory failure.

The Medical Schemes Amendment Bill & DSPs

The regulations to the Medical Schemes Act 131 of 1998 (MSA) point to two critical dimensions that determine healthcare quality among medical schemes' designated service providers (DSPs). These are access and clinical effectiveness. This article will argue that a crucial third pillar has been omitted from the MSA regulations. Specifically, that DSP arrangements for managed care organisations' disease management programs (DMPs) should demonstrate that their quality care processes effect patient empowerment. Through provider collaborations that bring the goals and decisions of patient living with chronic conditions to the centre of processes aimed at achieving positive healthcare quality outcomes. Interventions that would be consistent with enabling patient empowerment principles are: i) patient activation; ii) patient self-management; and iii) patient self-efficacy reviews.

Criteria for registering disease management programs

Among the criteria for registering disease management programmes, we need to explore the literature on what has been learned about healthcare networks and patient empowerment.

According to Wagner's CCM information is central to unlocking self-activation among chronic patients. Therefore, accreditation criteria for disease management programs should take into consideration all dimensions of the patient empowerment principal. This should light on which aspects of the patient centered care need to be emphasised in managed care contracts. A decomposition analysis on patient experience, and patient empowerment dimensions ought to be conducted by CMS, in order to, understand where managed care contract outcomes can be improved.

Inter-industry collaboration on COVID-19 & the fees bargaining framework

Providing medical scheme beneficiaries with information regarding the performance of scheme benefit options in from the perspective of fellow consumers is crucial. This will strengthen managed competition and make managed care a more viable solution for the sustainability of the private health financing system (Enthoven et al., 2019).

Theoretical game theory (bargaining games) experiments in the health sector, suggest that any tariff negotiation framework may be unbeneficial to competition outcomes (Ho and Lee, 2019) and (Ehlert et al., 2017). This is

because insurers are able to exclude market players or managed care organisations from the market. Attempts to restrict this type of behaviour by regulators, only increases start-up (sunk) costs and transaction costs (Ehlert et al., 2017). The effect of this is that medical schemes are able to restrict access to markets by managed care providers.

What might be essential for breaking the gridlock, is to provide information to beneficiaries on the performance of disease management programs for chronic conditions. Thereby, taking the gate keeping power of medical scheme, by allowing consumer directed access to markets. This makes patient experience surveys crucial for the optimal functioning of a bargaining platform for healthcare fees.

Results from the pilot survey on patient experience

The research and monitoring (R&M) conducted a pilot study on the patient experience of people living with diabetes. **Figure 1** shows the results by patient experience dimensions. Out of the four dimensions, it is evident that emotional and psychological support performed relatively worse than the other dimensions. In order to find out why, the R&M unit has developed a psychometric construct that measures psychosocial self-efficacy of beneficiaries living with diabetes.

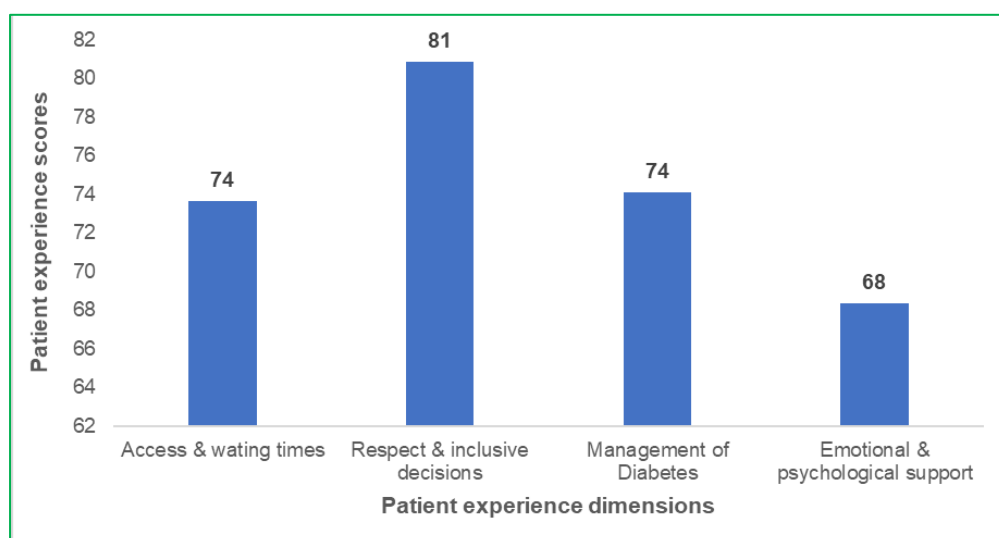


Figure 1: Patient experience scores by dimension (2018/19)

1.2 Purpose

The purpose of this analysis is to measure the patient empowerment of South African medical schemes' beneficiaries living with diabetes. The data used emanate from two patient experience surveys. The data were collected from an initial pilot survey in 2019, and from another survey conducted in 2020. Responses from the surveys will be assessed to evaluate whether patient-centred healthcare interventions have activated positive psychosocial self-efficacy, that is, if patient experience processes have resulted in patient empowerment.

The report will conduct a descriptive analysis on patient reported experience scores and treatment adherence outcomes, sourced from medical schemes' beneficiaries survey responses on diabetes disease management programmes (DDMPs). The DDMPs are registered by the CMS accreditation unit to provide diabetes managed care services.

Firstly; this analysis will hopefully be useful in identifying: i) not only, the status of patient experience regarding the impact of patient-provider relationships on the adherence of medical scheme beneficiaries living with diabetes; but also ii) identify instances in which patient experience can be acted upon in order to improve the overall patient satisfaction of medical scheme beneficiaries with diabetes management programmes.

Secondly, this analysis will reflect on diabetes management programmes from a perspective of the patient empowerment approach. This approach feeds off Wagner's Chronic Condition Model (CCM). In that the CCM describes information sharing and decision support to be crucial elements for managing chronic conditions. These elements are crucial for activating people living with chronic condition in a positive manner. They are crucial for developing intrinsic motivation for self-management routines. More recent work psychosocial self-efficacy metrics will also be considered.

The constructs that are to be unpacked in the analyses, will elucidate how the patient experience of those living with diabetes affects the patient empowerment process. Thus, resulting in positive outcomes treatment adherence, and patient satisfaction. Ultimately resulting in a net benefit for empowered medical schemes' beneficiaries living with diabetes.

The assessment of patient empowerment will be achieved by constructing diabetes empowerment measurement scales from responses extracted from a patient experience surveys. Hopefully, the analysis will inform how the CMS should proceed in further develop regulatory guidance, and registration standards for disease management programmes.

1.3 Objectives

The objectives of this report are:

- i) To report patient experience scores of medical schemes' beneficiaries living with diabetes.
- ii) To provide descriptive statistics on self-reported diabetes programme adherence.
- iii) To develop a patient empowerment psychometric scale from patient experience variables.
- iv) To conduct a concurrent evaluation on the empowerment scale tool.
- v) To test the construct validity of the empowerment scale.
- vi) To report patient empowerment scores.

- vii) To conduct a doubly robust quasi-experimental analysis with inverse probability weights to estimate the average treatment effect of patient empowerment on the treated.
- viii) To conduct a Blinder-Oaxaca decomposition on each of the patient empowerment dimensions using patient experience variables as predictors, in order to, prioritise areas for improving accreditation criteria.

2. METHODS

2.1 Formative Evaluation

This part of the methods section will provide a formative evaluation. Firstly, we will provide emerging themes on constructing psychometric scales for measuring patient empowerment of people living with chronic conditions. Secondly, we will explain the theory of the process and outcomes of patient empowerment. Thirdly, will conduct an essential aspect of criterion validation, which tests the repeatability of psychometric constructs for survey analysis, namely a concurrent evaluation. Concurrent validation also tests whether an implemented metric scale complies with well-established measurement scales.

The theory explains how patient centered care information drawn from the patient experience survey, can explain the process and outcome of:

- i) how people living with diabetes are activated, and as a result
- ii) are able to improve their self-efficacy in order to achieve better psychosocial outcomes, and thus
- iii) adhere to disease management protocol.

2.1.1 On psychometric scales for chronic conditions

An emerging issue from reviewing metric constructs for measuring patient empowerment from patient centered surveys, is that there is no standardised metric tool for chronic conditions (Barr et al., 2015). There are numerous studies from sampled in systematic reviews, each focusing on different set of questions for evaluating patient-centered care.

This trend has therefore made it critical for researchers to conduct concurrent evaluations on their metric constructs, relative to, what others have done who have sought to answer similar questions. Ultimately, there is therefore a need to develop generic survey questionnaires to measure patient empowerment for people living with chronic conditions.

There are three measurement scales that this paper has focused on. These are summarised in the paragraphs below.

Partners in Health (PIH) scale

Researchers who have conducted validation tests on the PIH scale are Veldman et al. (2017), Petkov et al. (2010) and Battersby et al. (2003). The purpose of the PIH scale is to measure the self-management behaviour of people living with a chronic condition. The survey tool used assess to what extent the self-management

behaviour is a result of knowledge and decision support. The knowledge and support attained from the healthcare community's coordinated network of support from GPs, nurses and social workers.

Incidentally, the first PIH scale was developed as a result of conducting the Health Plus programme in Australian States and Territories. A finding of a research study was that the effectiveness of managed care interventions was not dependent on acute interventions of complex chronic conditions. Good quality of health outcomes were rather dependent on increasing patients self-efficacy or self-management competency (Petkov et al., 2010).

This finding should be instructive to health authorities seeking to increase the efficacy of quality health outcomes. This is particularly refreshing for health authorities needing to demonstrate responsiveness through registering effective managed care interventions. Particularly for people living with chronic conditions.

Patient Activation Measurement (PAM) scale

The Patient Activation Measurement (PAM) scale has applied by researchers such as Rademakers et al. (2012) and Hibbard et al. (2004). The PAM scales measures how activated and informed people living with chronic conditions are.

Diabetes Empowerment Scale (DES)

The Diabetes Empowerment Scale (DES) is the measurement scale that is most relevant to this analysis. The scale is concerned with measuring diabetes related psychosocial self-efficacy. This essentially means that the measurement scale is concerned with identifying intrinsic self-motivated behaviour of people living with diabetes. Questionnaire variables assess patient activation, and the ability to interact with agents that can support self-management activities. Researchers who have published work on DES are the likes of Chen et al. (2011), Leksell et al. (2007), Shiu et al. (2003), and Anderson et al. (2000).

2.1.2 Face validity of framework of analysis

This section seeks to describe the face validity or rationale underlying the theoretical framework used to construct the measurement scale for patient empowerment.

Figure 2 shows how the process of improving the psychosocial outcomes, makes an eventual impact on adherence, occurs. The patient empowerment process contains three phases of the patient empowerment process (**Figure 2**). The process begins with patient activation and ends with patient self-efficacy. Each of these processes, e.g. self-efficacy – are prompted by indicators that are pulled from the patient experience survey questionnaire. Self-efficacy acts more directly on the psychosocial dimension of the patient experience scores.

Ultimately, if a patient -- feels activated, that they are able to self-manage their condition, and intrinsically empowered – a patient has had better patient experience and as result will adhere to treatment protocol.

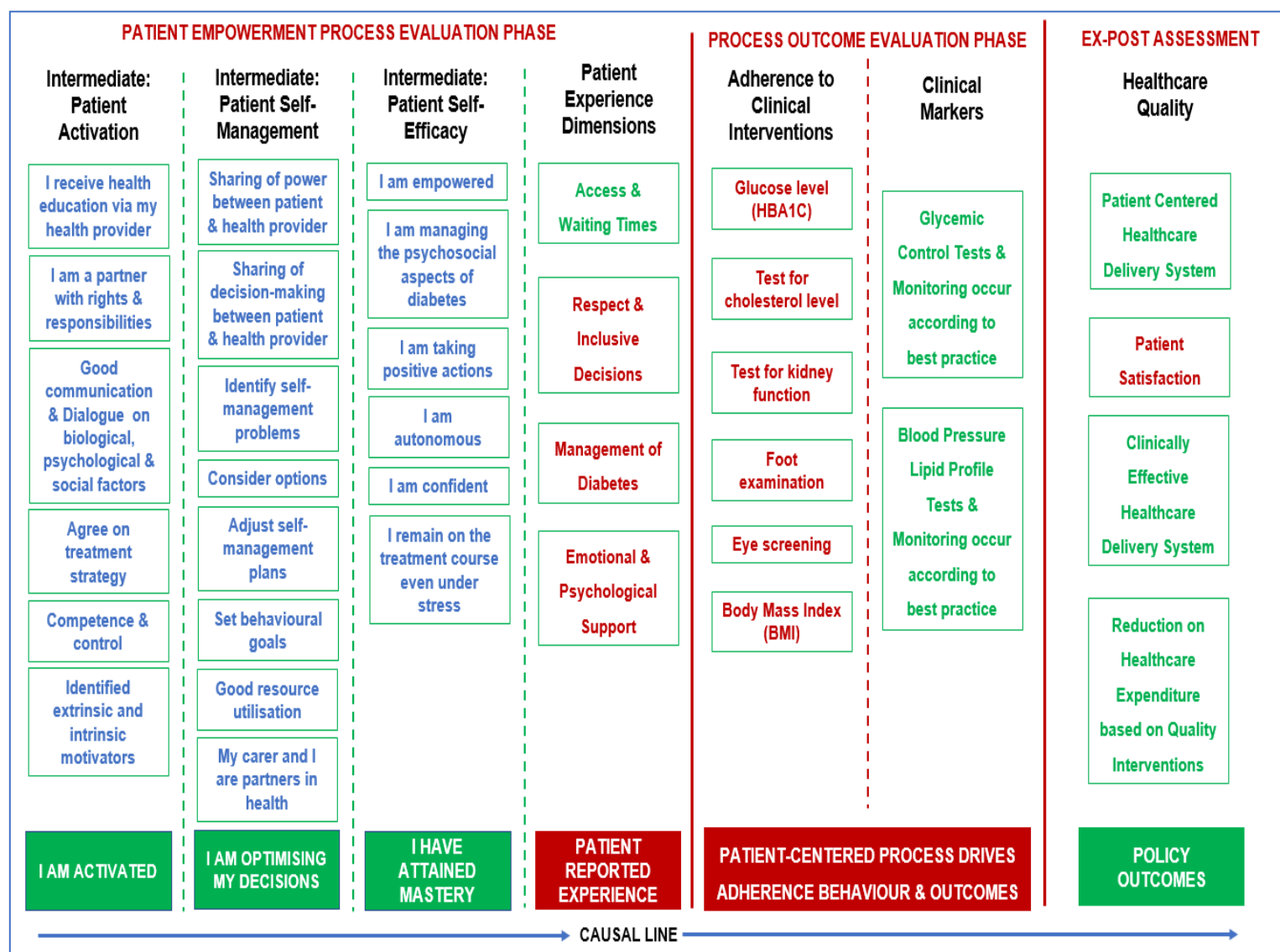


Figure 2: Logic model – patient empowerment process & outcome

2.1.3 Concurrent evaluation

The face validity of the theoretical framework for measuring patient empowerment using variables drawn the patient experience surveys, will be evaluated for repeatability using a validity criterion. The appropriate validity criterion for this is the concurrent evaluation. The concurrent evaluation tests the face validity of measurement constructs against established measurement scales in research literature. This means the variables used from our patient survey, will be compared against what others have used in order to construct diabetes empowerment measurement scales. This type of validation exercise means that the patient empowerment scores and findings will be repeatable as they will be based on an objective measurement scale.

Holmstrom and Roing (2010) found a link between patient-centeredness and patient empowerment, by identifying where the concepts shared similarities and where there were nuances between the concepts. Patient

centeredness can be achieved by inter-relationship between patient and care giver (patient experience). However, patient empowerment is a process of that leads to self-efficacy. Self-efficacy is an outcome that only the patient can choose to obtain. In other words, the patient self-selects to be activated and master self-manage (Holmstrom and Roing, 2010) and (Anderson et al., 2000).

Table 1 maps prerequisites for patient experience/centeredness to common factors associated with patient empowerment. The behavioural tools and skills needed by practitioners to activate people living with diabetes.

Table 1: Behaviour, skills & tools for patient centered care and empowerment

Prerequisites	Patient Centeredness	Patient Empowerment
Behaviour caregiver and patient:		
Patient is recognised as person	*	
Caregiver recognized as person	*	
Caregiver and patient find common ground on what the problem is and agree on management		
Sharing of power between caregiver and patient	*	*
Sharing of responsibility between caregiver and patient	*	*
Personal involvement of caregivers with patients, partnership between caregiver and patient based on mutual trust and respect		
Caregivers must have awareness and respect for individual patient's beliefs, recognize uniqueness of each individual patient	*	*
Motivation on part of patient	*	*
Caregivers must surrender need to control and decide for patients, should instead learn to be observers		*
Patient with poor health behaviour in need of behaviour change		
Skills necessary:		
Caregiver elicits and acknowledges patients' beliefs, priorities and fears	*	*
Caregiver reinforces psychosocial skills in patients, provides resources, skills and opportunities so that patients develop a sense of control		*
Caregiver encourages patients to review own experiences and reflect on what has worked for them		
Patient should possess ability to reflect on benefits of behaviour change		*
Tools necessary:		
Caregiver provides patient with information regarding diagnosis, pathology, treatment and prognosis	*	*
Education, decision aids, self-reflective tools, provided by caregiver, are useful in process of being empowered		*

Source: Holmstrom & Roing (2010)

Table 2 provides the dimensions, variables (questionnaire items), and rationale behind collected data from the patient experience survey. The variables are based on standard patient reported experience survey questionnaires.

Table 2: Patient experience dimensions and rationale

DIMENSIONS & VARIABLES OF PATIENT REPORTED EXPERIENCE		
Dimension	Variable	Rationale
Access & waiting times	Easy access	Fast access to reliable health advice and care
	Waiting times	Access is not rationed by long waiting times, and appointments are not postponed
Respect & inclusive decisions	Respect for patient	Patients are treated with dignity, kindness, compassion, courtesy, respect, understanding and honesty <i>(dignity & respect)</i>
	Inclusive decision making	Patients are actively involved in shared decision making and supported by healthcare professionals to make fully informed choices about investigations, treatment and care that reflect what is important to them. <i>(decision making) (express preferences and informed choice)</i>
	Explained diagnosis	Patients are supported by healthcare professionals to understand relevant treatment options, including benefits, risks and potential consequences. <i>(information & communication)</i>
	Knows prescription	Patients are supported by healthcare professionals to understand relevant treatment options, including benefits, risks and potential consequences. <i>(educating the patient) (information and communication)</i>
	Knows test results	Patients are supported by healthcare professionals to understand relevant treatment options, including benefits, risks and potential consequences. <i>(educating the patient) (information and communication)</i>
Management of diabetes	Discuss diet	Allow patients to actively participate in their care <i>(allow opportunity to self-manage) (tailored service to meet individual's needs)</i>
	Discuss physical exercise	Evidence of arrangements to ensure that patients have their physical needs regularly assessed and addressed <i>(allow opportunity to self-manage) (tailored service to meet individual's needs)</i>
	Discuss disease management	Allow patients to actively participate in their care, and evidence of arrangements to ensure that patients meet objectives <i>(allow opportunity to self-manage) (tailored service to meet individual's needs)</i>
Emotional & psychological support	Emotional support	Evidence of arrangements to ensure that patients have their psychological needs regularly assessed and addressed. <i>(knowing the patient as an individual) (social, personal and psychological factors taken into account)</i>
	Confident managing condition	Patients have opportunities to discuss their health beliefs, concerns and preferences to inform their individualised care. <i>(knowing the patients as an individual)</i>
	Consistent messages	Patients experience coordinated care with clear and accurate information exchange between relevant health and social care professionals. <i>(knowing the patient as an individual) (coordinated care)</i>
	Integrate family support	Patients are able to be supported by family structure and this reinforces after service-point care <i>(knowing the patient as an individual) (continued care)</i>

Source: Compiled by analyst.

Table 3 describes the domains for patient empowerment scales in research literature and compares these to the domains collected in the CMS patient experience survey. The literature cover three different measurement scales. These are:

- i) Diabetes Empowerment Scale (DES)
Five different research articles concurred with the variables used in the patient experience survey.
- ii) Partners in Health (PIH) scale
Three different research articles were similar in terms of the variables used in the patient experience survey

iii) Patient activation Measure (PAM)

Three different research articles' survey tool items for measuring patient empowerment, agreed with the variables used in the CMS patient experience survey.

Table 3: Synthesis on patient empowerment & patient experience survey literature

Measuring scale	Author and purpose of scale	Target population	No. of Items	Domains	Mapping patient reported experience domains
Diabetes Empowerment Scale (DES)	Anderson et al. (2000): Measures psychosocial self-efficacy as empowerment outcome.	People living with diabetes	28	Three domains: 1. Managing the psychosocial aspects of diabetes; 2. Assessing dissatisfaction & readiness to change; 3. Setting & achieving diabetes goals.	1. Emotional and psychological support; 2. Respect and inclusive decisions; 3. Management of diabetes.
	Anderson et al. (2003): Measures psychosocial self-efficacy as empowerment outcome. (Short form)	People living with diabetes	8	Eight domains: 1. Assess need for change; 2. Developing a plan; 3. Overcoming barriers; 4. Asking for support; 5. Supporting oneself; 6. Coping with emotion; 7. Motivating oneself; 8. Making appropriate choices	1. Respect & inclusive decisions; 2. Respect & inclusive decisions; 3. Management of diabetes; 4. Emotional & psychological support; 5. Emotional & psychological support; 6. Emotional & psychological support; 7. Emotional & psychological support; 8. Management of diabetes
	Shiu et al. (2003): Measures self-efficacy as empowerment outcome.	People living with diabetes	20	Five domains: 1. Overcoming barriers; 2. Determining suitable methods; 3. Achieving goals; 4. Obtaining support; 5. Coping.	1. Respect & inclusive decisions; 2. Respect and inclusive decisions; 3. Management of disease; 4. Emotional and psychological support; 5. Emotional and psychological support.
	Leksell et al. (2007): Measures self-efficacy as empowerment outcome.	People living with diabetes	23	Four domains: 1. Goal achievement; 2. Self awareness; 3. Stress management; 4. Readiness to change.	1. Management of diabetes; 2. Emotional & psychological support; 3. Emotional & psychological support; 4. Emotional & psychological support
	Chen et al. (2011): Measures empowerment as a process.	People living with diabetes	15	Four domains: 1. Mutual participation; 2. Raising awareness; 3. Providing necessary information; 4. Open communication	1. Respect & inclusive decisions; 2. Respect & inclusive decisions; 3. Respect & inclusive decisions; 4. Respect & inclusive decisions.
Patient Activation Measure (PAM)	Rademakers et al. (2012): Generic scale focusing on the patient activation process. (Short form)	People living with chronic conditions	13	Four domains: 1. Patients believe that their role is important; 2. Patients have confidence and knowledge to take action; 3. Taking action; 4. Staying on course under stress.	1. Respect & inclusive decisions; 2. Emotional & psychological support; 3. Management of disease; 4. Emotional & psychological support.
	Hibbard et al. (2004): Generic scale focusing on the patient activation process.	People living with chronic conditions	22	Five domains: 1. Patients believe that their role is important; 2. Patients have confidence and knowledge to take action; 3. Taking action; 4. Staying on course under stress.	1. Respect & inclusive decisions; 2. Emotional & psychological support; 3. Management of disease; 4. Emotional & psychological support.
	Hibbard et al. (2005): Generic scale focusing on patient activation process. (Short form)	People living with chronic conditions	13	Four domains: 1. Patients believe that their role is important; 2. Patients have confidence and knowledge to take action; 3. Taking action; 4. Staying on course under stress.	1. Respect & inclusive decisions; 2. Emotional & psychological support; 3. Management of disease; 4. Emotional & psychological support.
Partners in Health (PIH)	Lenferink et al. (2016): Focuses on self-management skills and patient knowledge.	COPD patients	12	Three domains: 1. Knowledge; 2. Coping; 3. Recognition and management of symptoms; 4. Adherence to treatment.	1. Respect & inclusive decisions; 2. Emotional & psychological support; 3. Respect & inclusive decisions; 4. Management of diabetes.
	Battersby (2003): Chronic disease management at primary care level.	People living with chronic conditions	11	Five domains: 1. Core self-management; 2. Condition knowledge; 3. Symptom monitoring.	1. Management of diabetes; 2. Respect & inclusive decisions; 3. Management of diabetes
	Petkov et al. (2010): Generic scale focusing on self-management of comorbid profiles.	People living with chronic conditions	12	Four domains: 1. Knowledge; 2. Coping; 3. Management of condition; 4. Adherence to treatment.	1. Respect & inclusive decisions; 2. Emotional & psychological support; 3. Management of diabetes; 4. Management of diabetes.

Table 4 concludes the concurrent evaluation by mapping the DES domains with the patient experience survey domains which were used in this analysis. The questionnaires from the literature seemed to ask similar questions

as in the CMS patient experience survey. Therefore, this analysis passes the validity criterion of concurrent evaluation.

Table 4: Concurrent evaluation of patient centered and patient empowerment survey tools

PREM Domain	Empowerment Component	PREM Questions	Anderson et al. (2000): Measures psychosocial self-efficacy as empowerment outcome.	Shiu et al. (2003): Measures self-efficacy as empowerment outcome.	Leksell et al. (2007): Measures self-efficacy as empowerment outcome.	Chen et al. (2011): Measures empowerment as a process.
Respect & Inclusive decisions	Patient's activation	I felt I was treated with respect and dignity during my medical scheme calls, and/or doctor visits for my diabetes condition.				*
		I was involved, as much as I wanted to be, in decisions about my care and treatment.	*	*	*	*
		The doctor or nurse explained matters concerning my diabetes condition, in a clear and understandable manner.	*	*	*	
		I know why I am prescribed each of the medications for my blood glucose control.				
		I understand the purpose, and meaning of the results, of each of the routine checks/tests for my diabetes condition.				
Management of diabetes	Patient's self-management	The doctor or nurse had a discussion with me regarding the food that I eat and any changes I could make to my diet.	*	*	*	*
		I discussed my levels of physical activity, and changes that I could make to my physical exercise plan.	*	*	*	*
		During my last appointment, I discussed and agreed with my doctor, about how to manage diabetes condition.	*	*	*	*
Emotional and psychological support	Patient's psychosocial self-efficacy	The emotional support received from my doctor, nurse or diabetes management programme, has helped to relieve my fear and/or anxieties associated with my diabetes condition.	*	*	*	*
		Due to the support received from my doctor, nurse or diabetes management programme, I am confident about managing my diabetes condition.	*	*	*	
		I did not experience a situation where: a doctor or nurse will say one thing, and the other will say something quite different, regarding my Diabetes Mellitus condition.				
		The medical scheme and/or diabetes management programme provided my family with information to support me in coping with my diabetes condition.				

Source: Compiled by analyst.

2.2 Data

2.2.1 Study population & data source

The study target population is 303, 847 medical scheme beneficiaries living with diabetes, that are registered on medical schemes' disease lists for diabetes. The study is based on primarily sourced data from two patient experience surveys. Two samples are analysed, one from each patient experience survey. The data are not analysed using panel data, as survey participants were not followed from one survey period to the other. The

sample size for the survey conducted in 2019 is 4, 328 beneficiaries. The sample size for the survey conducted in 2020 is 8, 666 beneficiaries.

2.2.2 Data collection and response follow-ups

The data were collected from using a google forms survey tool which is an online platform for conducting surveys. Medical schemes were requested to ask beneficiaries on diabetes disease management programs, to fill in the survey questionnaire. The survey tool was open for two months over the separate survey period, 2019 and 2020, respectively. The research team conducted survey responses follow-ups on a two-weekly basis. Medical schemes were reminded to request beneficiaries to complete the survey. The survey was a voluntary survey, and respondents' identities are not known by the research team. No confidential data of a clinical nature, such as medical test results, were asked.

2.2.3 Sample size

A sample size calculator was used to determine the minimum sample size for conducting the survey. The results are shown in **Figure 3**. An assumption of a 95% confidence interval, with a 1.5% margin of error and a 50% likelihood of participation, yielded minimum required sample size of 4, 259 respondents. Both survey samples meet this sample size criteria.

Sample size: **4269**

This means 4269 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within $\pm 1.5\%$ of the measured/surveyed value.

Confidence Level:

Margin of Error:

Population Proportion: Use 50% if not sure

Population Size: Leave blank if unlimited population size.

Calculate

Figure 3: Calculation of sample size
www.calculator.net/sample-size-calculator

Table 5 reports the results of a univariate statistical power analysis conducted in SAS 9.4, using the PROC GLMPower procedure. A plot of the results is illustrated in **Figure 4**. The purpose of the analysis is to check if there will be enough degrees of freedom to allow for reducing the chance of a Type II error, when conducting the regression analysis of adherence visits on predictor variables.

The statistical power procedure calculated required sample and resulting statistical power for the 2019 survey, data for five predictor variables. The independent variable was number of visits for treatment adherence. The

parameters used for generating the sample size (**Table 5**): i) an alpha of 0.05; ii) a standard deviation of 1, and iii) a nominal power of 0.9.

Table 5: Sample size for mixed model regression (2019 sample)

Computed Sample Size with GLMPOWER PROCEDURE			
Index	Categorical Variable	Actual Power	Sample Size
1	Empowered	0.94	519
2	Gender	0.90	2 249
3	Scheme Size	0.92	2 249
4	Education	0.92	2 768
5	Diabetes type	0.91	1 730

Note: Dependent variable = Visits

$\alpha = 0.05$, stdev = 1, nominal power = 0.9

Figure shows how statistical power increased as the sample size grows. With a statistical power 0.8, all variables have yielded a sample size that render our sample adequate for the model regression analysis.

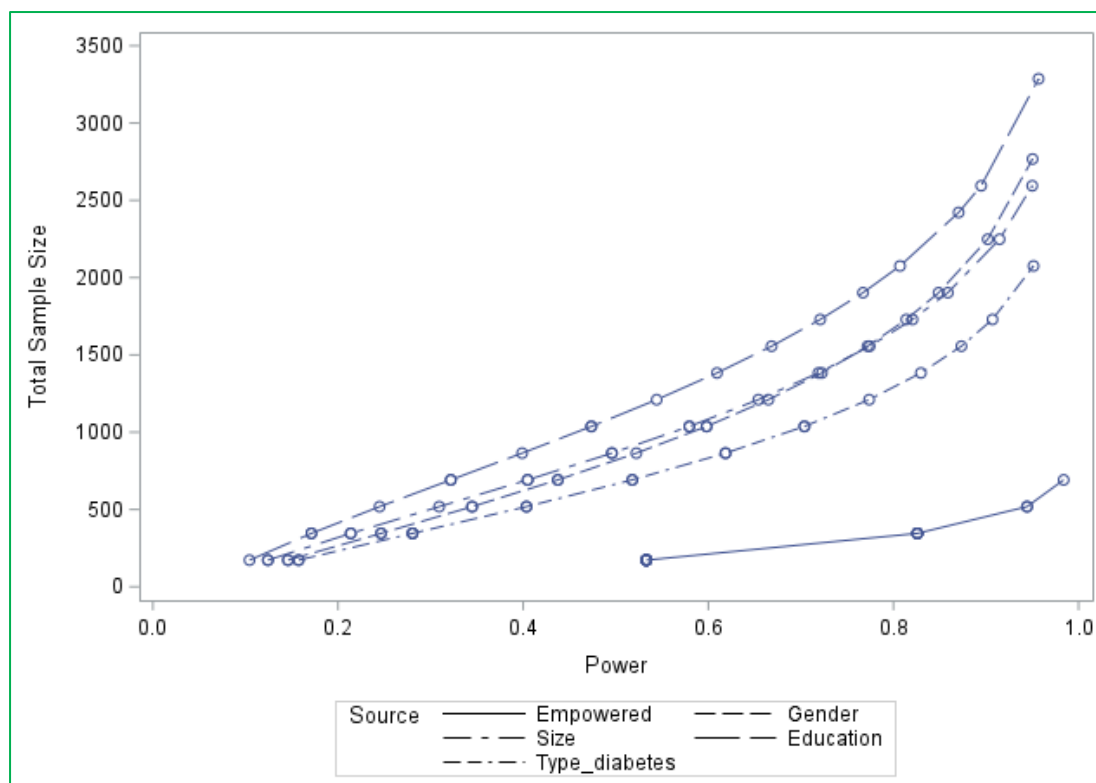


Figure 4: Statistical power plot to determine sample size (2018/19)

Table 6 reports computed statistical power, given a nominal sample size of 4, 328 survey participants. The same parameters are used as in the case for sample size calculation for conducting a regression analysis. **Table 6** shows that a sample size of 4, 328 survey participants yields a very high statistical power. **Figure 5** provides an illustration of what is reported in **Table 6**.

Table 6: Statistical power for mixed model regression (2019 sample)

Computed Statistical Power		
Index	Categorical Variable	Power
1	Empowered	>.999
2	Gender	0.995
3	Scheme Size	0.998
4	Education	0.99
5	Diabetes type	>.999

Note: Dependent variable = Visits

$\alpha = 0.05$, stdev = 1, nominal sample size = 4,328

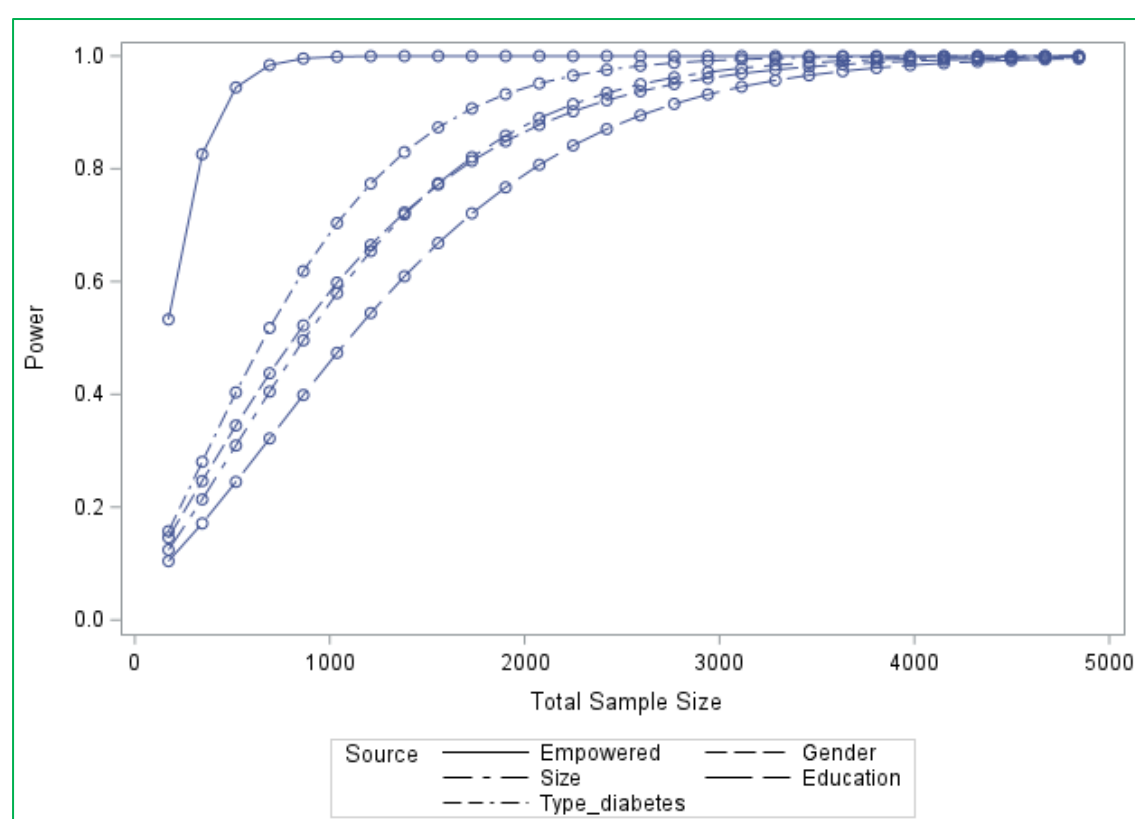


Figure 5: Statistical power plot to determine reliability against Type II error

2.2.4 Sampling method

A weighted sampling technique was used to score patient experience responses of survey participants. This was done to reduce survey bias introduced by over-representing beneficiaries with a particular type of characteristic. Over representation of a specific profile, would have not allowed the patient experience scores to represent the true characteristics of the target population. The sampling scheme is illustrated in [Table 7](#).

Table 7: Sampling scheme

Scheme Size	Gender	Age Bands	Proportion of Diabetic Beneficiaries
Very Large Schemes	Females	15-34	
		35-49	
		50-64	
		65+	
	Males	15-34	
		35-49	
		50-64	
		65+	
Large Schemes	Females	15-35	
		35-50	
		50-65	
		65+	
	Males	15-36	
		35-51	
		50-66	
		65+	
Medium Size Schemes	Females	15-37	
		35-52	
		50-67	
		65+	
	Males	15-38	
		35-53	
		50-68	
		65+	
Small Schemes	Females	15-39	
		35-54	
		50-69	
		65+	
	Males	15-40	
		35-55	
		50-70	
		65+	

2.2.5 Data management

The data were exported from Google forms into excel. The survey responses were scored for quantitative analysis and imported into SAS 9.4, for conducting statistical analysis. The results were exported into excel to construct figures and tables for reporting purposes. The decomposition analysis was done in Stata 13.

2.2.6 Variables

The variables used to for the patient experience and patient empowerment analysis are listed in [Table 8](#). [Table 8](#) also provides the rationale for including them.

Table 8: Variables and rationale

DIMENSIONS & VARIABLES OF PATIENT REPORTED EXPERIENCE		
Dimension	Variable	Rationale
Access & waiting times	Easy access	Fast access to reliable health advice and care
	Waiting times	Access is not rationed by long waiting times, and appointments are not postponed
Respect & inclusive decisions	Respect for patient	Patients are treated with dignity, kindness, compassion, courtesy, respect, understanding and honesty <i>(dignity & respect)</i>
	Inclusive decision making	Patients are actively involved in shared decision making and supported by healthcare professionals to make fully informed choices about investigations, treatment and care that reflect what is important to them. <i>(decision making) (express preferences and informed choice)</i>
	Explained diagnosis	Patients are supported by healthcare professionals to understand relevant treatment options, including benefits, risks and potential consequences. <i>(information & communication)</i>
	Knows prescription	Patients are supported by healthcare professionals to understand relevant treatment options, including benefits, risks and potential consequences. <i>(educating the patient) (information and communication)</i>
	Knows test results	Patients are supported by healthcare professionals to understand relevant treatment options, including benefits, risks and potential consequences. <i>(educating the patient) (information and communication)</i>
Management of diabetes	Discuss diet	Allow patients to actively participate in their care <i>(allow opportunity to self-manage) (tailored service to meet individual's needs)</i>
	Discuss physical exercise	Evidence of arrangements to ensure that patients have their physical needs regularly assessed and addressed <i>(allow opportunity to self-manage) (tailored service to meet individual's needs)</i>
	Discuss disease management	Allow patients to actively participate in their care, and evidence of arrangements to ensure that patients meet objectives <i>(allow opportunity to self-manage) (tailored service to meet individual's needs)</i>
Emotional & psychological support	Emotional support	Evidence of arrangements to ensure that patients have their psychological needs regularly assessed and addressed. <i>(knowing the patient as an individual) (social, personal and psychological factors taken into account)</i>
	Confident managing condition	Patients have opportunities to discuss their health beliefs, concerns and preferences to inform their individualised care. <i>(knowing the patients as an individual)</i>
	Consistent messages	Patients experience coordinated care with clear and accurate information exchange between relevant health and social care professionals. <i>(knowing the patient as an individual) (coordinated care)</i>
	Integrate family support	Patients are able to be supported by family structure and this reinforces after service-point care <i>(knowing the patient as an individual) (continued care)</i>

2.3 Analysis

2.3.1 Construct validity of measurement scale

There were three processes used to establish the construct validity (validity in the data construct) of the theoretical framework underpinning the patient empowerment measurement scale. These analyses are explained in the paragraphs below.

i) Confirmatory factor analysis

- Confirmatory factor analysis was carried out to assess whether observed patient experience variables are associated with latent patient empowerment dimensions.
- The structure of the confirmatory factor analysis model was driven by the theory in literature.
- The theorized latent factors were the dimensions of patient empowerment which are: 1) patient activation; 2) patient self-management; and 3) patient self-efficacy.
- The theoretical underpinning underlying the model hypotheses are what the model was confirming.

ii) Exploratory factor analysis

- Exploratory factor analysis was then.
- Exploratory factor analysis tries to find associations between the models without any theoretic underpinnings the model.
- The only thing of importance in an exploratory factor analysis are the model fit parameters.
- The results of the analysis lead to a factor reduction (identification of total valid latent variables) and loading of survey items (patient experience variables) to latent variables.
- It is at this point that the theoretic underpinnings of the model are also considered, in deciding whether certain patient experience variables or factors will be dropped, if the factor loading eigenvalues suggest a better model fit.

iii) Second order confirmatory factor analysis

- Higher order factor analysis is required if an additional factor underpins the covariances in the primary factors. A structural equation model (SEM) is used to fit the causal link between patient empowerment and patient experience variables.
- The primary latent factors, in the instance, were: 1) patient activation; 2) patient self-management; and 3) patient self-efficacy.
- It was hypothesized that the first order factors are associated with a secondary latent factor. In this instance the secondary latent factor was patient empowerment.
- A Schmid-Leiman transformation is used to decompose the structural component of the model from the residual component of the second-order factor analysis. This is done to evaluate the extent to which the latent factors of patient empowerment have a causal association with observed patient experience variables (Brown, 2016).

2.3.2 Internal validity of survey tool

A Cronbach alpha test was conducted to test the internal validity of the diabetes empowerment scale. Only the relevant sections of the patient experience survey tool were used to test the internal consistency of the survey tool. This was necessary, as the variables used to score patient empowerment were sourced from participants' responses in the patient experience surveys.

2.3.3 Quasi-experimental analysis

All medical schemes' beneficiaries who are identified to be living with diabetes, should be registered on an appropriate disease management program (by a way of a medical scheme chronic disease registry). However, the behaviour of beneficiaries on scheme disease registries, might not be similar. This is because of the very the nature of the patient empowerment. Patient empowerment requires patient autonomy, resulting in self-selection (Anderson et al., 2000). This is determined by the way that patient decide take-on the disease management processes.

The patient empowerment approach to disease management's success, depends on the self-management decisions made by individual programme participants. Therefore, unseen personal effects that lend themselves to self-selection may creep into the model. Heterogeneous (dissimilar) characteristics of beneficiaries registered on disease registries, might make beneficiaries behave dissimilarly as a result of engaging with healthcare providers.

This means that there are selection biases which creep into measurement processes. Thus, these may hamper the estimation of the true impact of patient centered collaborative approaches (patient experience variables), that lead to patient empowerment. Specifically, these are an impediment to estimating the true impact of patient reported experience scales on patient treatment adherence and patient satisfaction scores.

This analysis adapts a method used by Lamm and Yung (2017). Their estimation method adjusts for unseen behaviour by matching (in this case inverse weights) characteristics of treatment and control. This balances the control group and treatment group characteristics. This allows for a counterfactual evaluation of treatment effects, by making the control group mirror the treatment group in characteristics. The counterfactual effect renders the control group similar to the treatment group, and it is as though the same people are being treated and not treated. Thus, the marginal effect being identified is the average treatment effect on the treated.

We use a structural equation model (SEM). The SEM incorporates a doubly robust procedure, with augmented inverse probability weights (Lamm and Yung, 2017). This model is appropriate for conducting cross-section experimental analyses using survey data that is non-random in nature.

Figure 6 is a directed acyclic graph (DAG) which illustrates how we adjust for selection bias in the SEM. It shows how the different characteristics of participating survey respondents may impact the treatment and outcome variables. The SEM accounts for these selection bias effects separately and provides the true treatment effects difference between the control and treatment groups. So that policy makers know the true effect of an intervention on managed care organisation registration criteria, on quality of health outcomes.

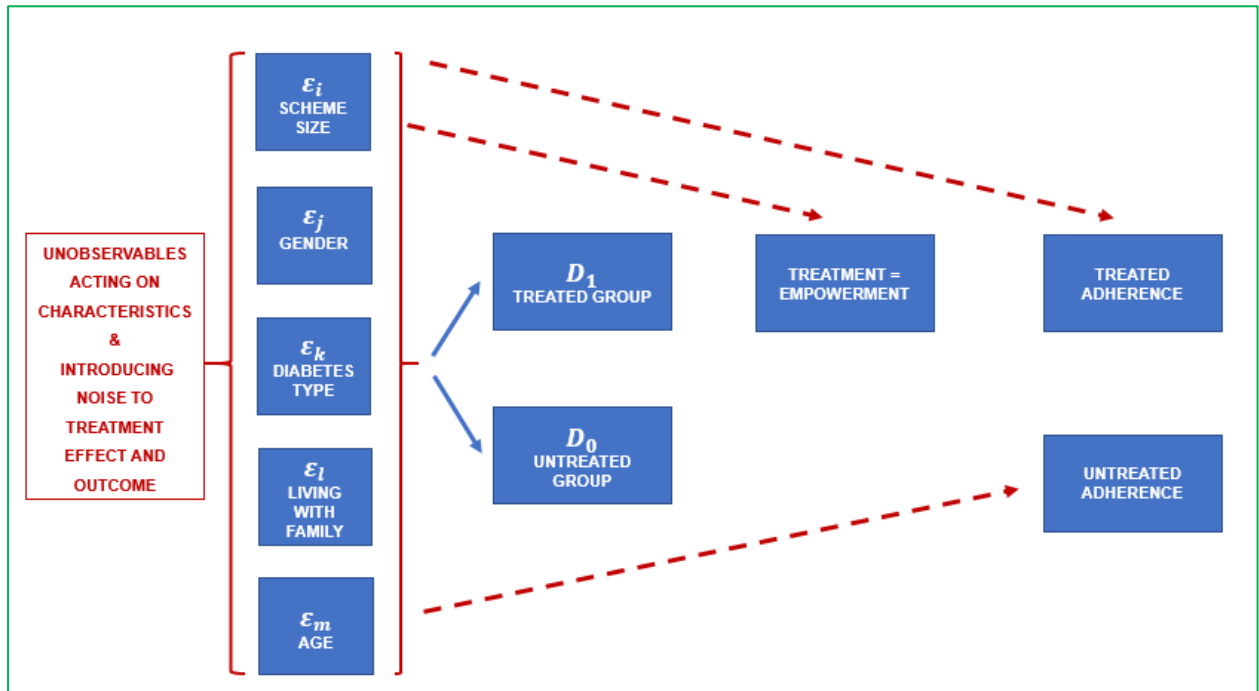


Figure 6: Directed acyclic graph (DAG) -- matching by observable characteristics

2.3.4 Blinder-Oaxaca decomposition

A positive patient experience resulting from interpersonal engagements between the chronic patient and health provider, initiates a collaborative partnership between caregiver and patient. If the person living with a condition is to master self-management of the condition, the patient needs to decide to activate self-efficacious behaviour.

In this analysis we use Blinder-Oaxaca decomposition to investigate how self-reported treatment adherence, can be explained by patient empowerment dimensions. Each patient empowerment dimension contains elements of self-reported patient experience variables. We include a categorical (on/off button) in the regression, to distinguish between the group that has chosen to demonstrate patient-empowerment behaviour, and the group that has not demonstrated such behaviour.

We use an approach developed by Jann (2008) for implementing Blinder-Oaxaca linear regressions using Stata. We implement a weighted sample survey procedure to the decomposition regression, in order to, have a balanced sample of treatment and control group subjects (Jann, 2008).

The data we use for the Binder-Oaxaca regression has been adjusted for differences in characteristics of survey participants. This is because we use patient experience scores that have been weighted to adjust for survey bias emanating from differences in respondents' characteristics. The results will then reflect differences in endowments. More specifically, the endowments are patient experience scores.

3. RESULTS

We implemented descriptive statistical techniques, causal structural equation analysis, and micro-econometric programme evaluation methods to the patient experience survey data. The result is we have eight sub-sections that seek to describe and draw inferences about the state of patient experience for beneficiaries living with diabetes. We then seek to close policy gaps applying patient experience data to the theory of patient empowerment. We hope the inferences we make from the observed data, are of policy significance and will be found compelling to the medical schemes industry and covered beneficiaries. Particularly for beneficiaries those living with diabetes.

3.1 General Characteristics of Survey Responses

Section 3.1 presents results on the extrapolative quality of the sample data to describe the true population. We then proceed to describe: i) the characteristics of survey participants; ii) the characteristics of diabetes condition itself; iii) the characteristics of the diabetes disease management programs; and iv) the modes of accessing healthcare delivery. The section closes by stating key findings from the results presented in sub-section 3.1.6.

3.1.1 *Extrapolative properties of sample observations*

This sub-section provides summary statistics of the target population and compares these with the sample of survey participants. The data are provided to assess the similarity between the target population of interest and the survey respondents, in order to, evaluate the ability to extrapolate findings made about the survey sample.

We use the same variables we applied to the weighted sampling method to assess whether the sample is similar to the distribution of the target population. The variables are: i) gender; ii) age and iii) the size of medical schemes that beneficiaries are covered.

Figure 7 describes the proportion of males relative to females who are registered on diabetes disease management programmes in South African medical schemes. **Figure 8** shows the proportion of males to females among the sample survey respondents. The pie charts illustrate the following comparative results:

- i) The proportion of males to females was 53% males, relative to 47.0% females, in the target and sample populations, respectively.
- ii) The proportion of males to females was 47% females, relative to 39.4% females, in the target and sample populations, respectively.
- iii) The proportional distributions of males to females between the sample and target populations are more approximately similar enough for extrapolation purposes.

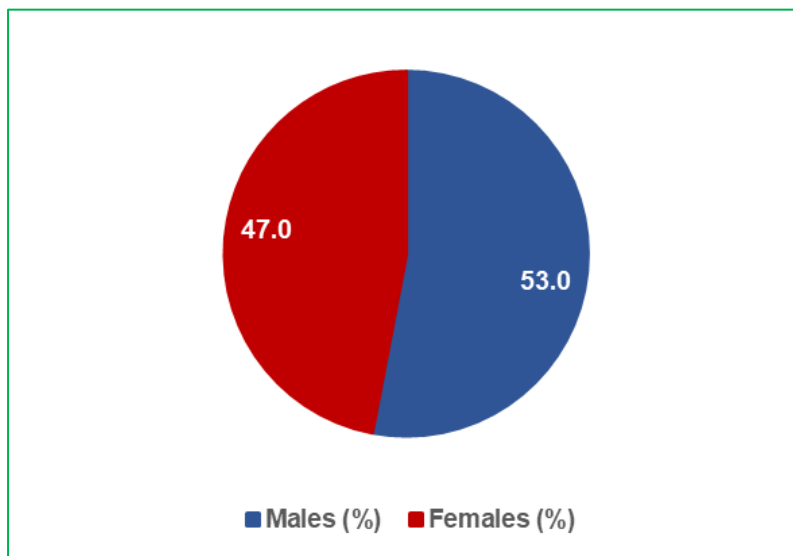


Figure 7: Target population – diabetes prevalence by gender

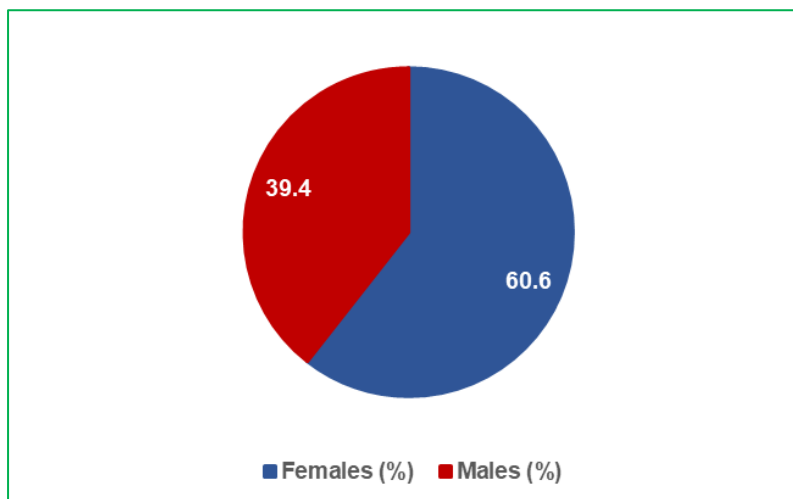


Figure 8: Survey Participants – diabetes prevalence by gender

Figure 9 is a histogram that illustrates the relative proportional distribution of medical schemes' beneficiaries who are living with diabetes, across age bands (**Figure 9**). The blue bins represent the target population and the orange bins represent the sample population (**Figure 9**). The sample and target population have similar age distributions.

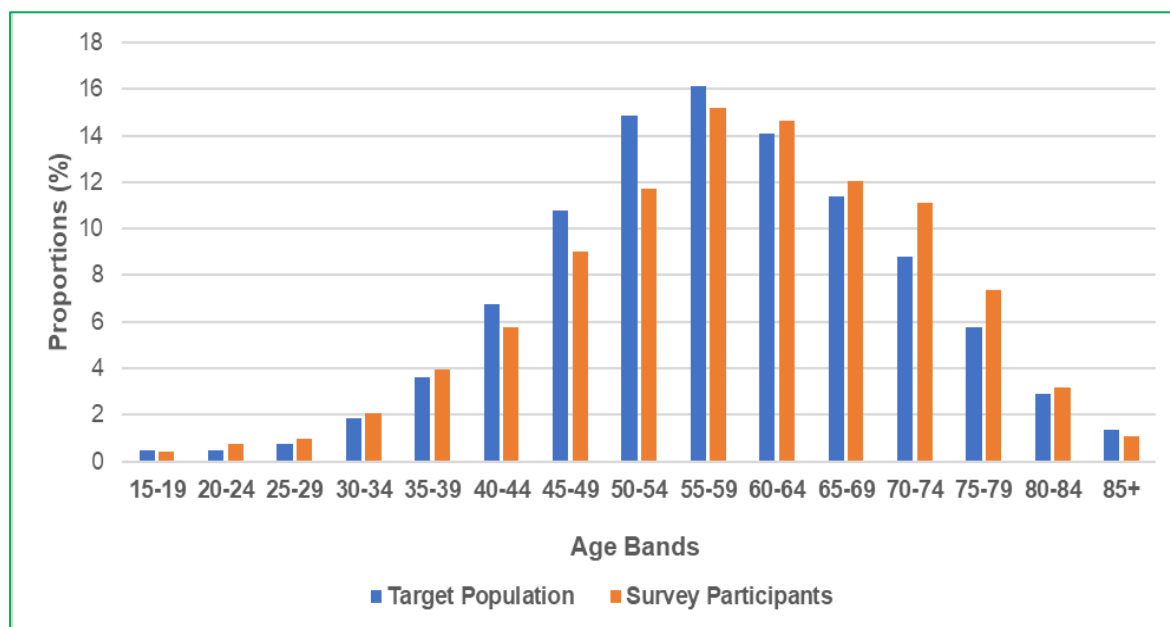


Figure 9: Survey participants vs target population by age

Figure 10 is a pie-chart that shows proportions of medical schemes' beneficiaries living with diabetes, by scheme size for the target population. Figure 11 is a pie-chart that shows proportions of medical schemes' beneficiaries living with diabetes, by scheme size for the population sample. The graphs provide a comparative evaluation with the following results:

- i) Very large schemes -- 70% of the beneficiaries in the target population compared to 63% from the survey sample.
- ii) Large schemes -- 19% of the beneficiaries in the target population compared to 20% from the survey sample.
- iii) Medium size schemes -- 8% of the beneficiaries in the target population compared to 13% from the survey sample.
- iv) Small schemes -- 3% of the beneficiaries in the target population compared to 4% from the survey sample.
- v) The distributions of beneficiaries across medical scheme size distributions in similar in the target population and the survey sample.

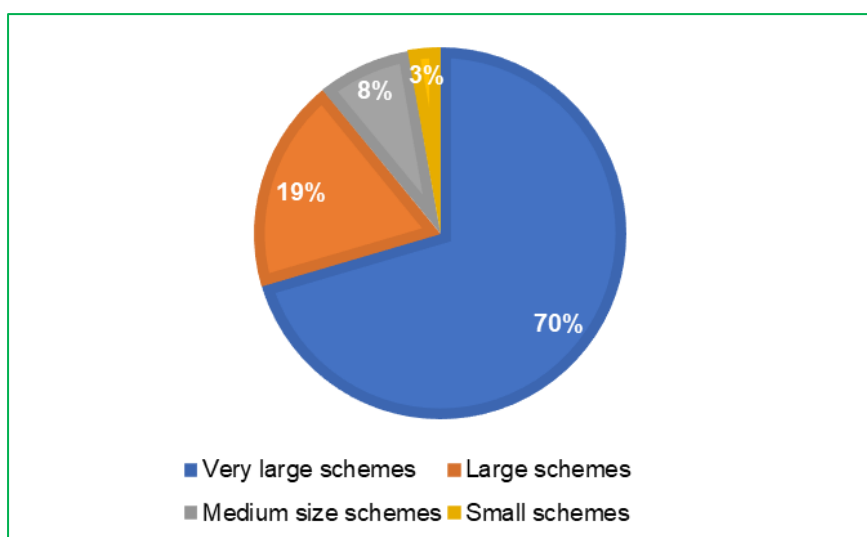


Figure 10: Target population – diabetes prevalence by scheme size

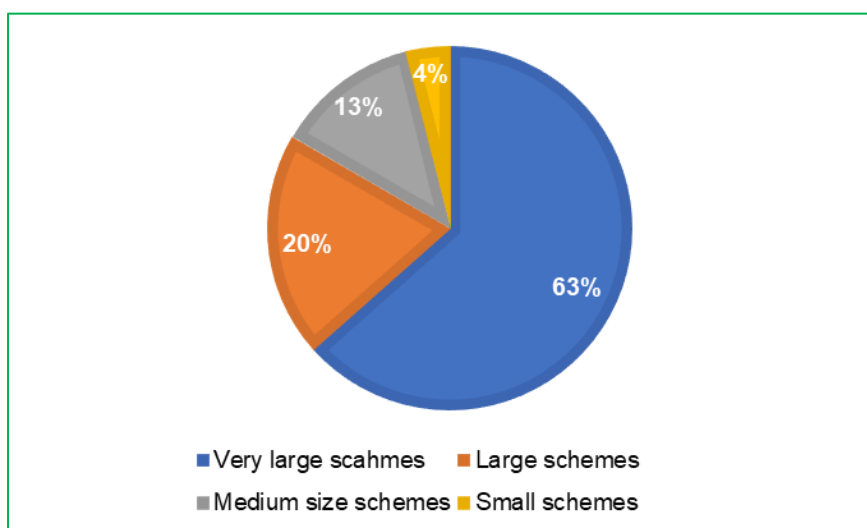


Figure 11: Survey participants – diabetes prevalence by scheme size

3.1.2 Demographic characteristics of survey participants

This sub-section describes the demographic characteristics of survey samples for 2019 (2018/19) and 2020 (2019/20). The number of observations for the 2019 and 2020 survey periods were -- 4, 328 and 8, 666 respondents respectively.

Table 9 reports the survey participants' ages, gender and education for 2019 and 2020. The summary statistics and distribution of data, are as follows:

- i) The distribution of the variable values is consistent for periods, suggesting that the parameters used for the sample calculation, and the weighted sampling schema yielded accurate and consistent estimates for both periods.
- ii) More than 60% of all survey respondents were at least 55 years of age, in 2019 and 2020.

- iii) There were more male than female respondents for both 2019 and 2020. This is consistent with the prevalence of diabetes in the medical schemes industry.
- iv) The education levels of the respondents were:
 - Over 94.8% of the respondents had secondary school education.
 - At least 54% of the respondents had a bachelor's degree.
 - This observation is significant as level of education has an impact on patient experience and patient empowerment process outcomes.

Table 9: Participants' age, gender & education levels

Variable	2018/2019		2019/2020	
	N	%	N	%
Age (years)				
<35	217	4.9	323	3.7
35-44	426	9.7	814	9.4
45-54	910	20.7	1 900	21.9
55-64	1 310	29.9	2 706	31.2
>65	1 525	34.8	2 923	33.7
Gender				
Females	1 718	39.4	3 712	42.8
Males	2 640	60.6	4 954	57.2
Education				
No formal education	63	1.4	109	1.3
Primary school	164	3.7	304	3.5
Secondary School	1 792	40.8	3 268	37.7
Diploma/Bachelors degree	1 741	39.7	3 492	40.3
Post-Graduate	628	14.3	1 493	17.2

NB: Survey samples 2018/19 n=4,328 and 2019/20 n=8,666

Table 10 reports the summary statistics for survey respondents' medical scheme size and size of household, for both the 2019 and 2020 survey periods. The summary statistics read as follows:

- i) At least 60% of the survey respondents were from very large schemes, for both 2019 and 2020.
- ii) Only 10% of the survey respondents reported to live alone in 2020. We only included the survey question after the 2019 pilot survey, so there are no comparative figures for 2019.

Table 10: Participants' scheme & household size

Variable	2018/2019		2019/2020	
	N	%	N	%
Scheme size				
Very Large	2 781	63.4	6 356	73.3
Large	874	19.9	1 327	15.3
Medium	560	12.8	781	9.0
Small	170	3.9	202	2.3
Household size				
Live alone	N/A	N/A	884	10.2
2 people	N/A	N/A	3 115	35.9
3 people	N/A	N/A	1 623	18.7
4 people	N/A	N/A	1 421	16.4
5 people	N/A	N/A	889	10.3
6 people	N/A	N/A	734	8.5

NB: Survey sample 2018/19 n=4,328 and 2019/20 n=8,666.

N/A=not included in survey questionnaire in that year.

Table 11 reports the history and control of the survey respondents' diabetes conditions, for the survey periods of 2019 and 2020. We don't have comparative data for the duration of the condition nor the comorbidities for 2020. This is because the questions were inadvertently excluded in the 2020 survey. The results are as follows:

- i) Seventy percent of the respondents had Type II diabetes, at least 16% had Type I diabetes, and at least 9.7% were not sure. The higher prevalence of Type II diabetes among the survey respondents is consistent with prevalence in the true population.
- ii) In 2019 survey period, 45% percent of the survey respondents were diagnosed with diabetes for more ten years ago, and 70% have been diagnosed for at least 6 years. This will have an impact on the patient empowerment dimension on mastering diabetes self-management. We do not have comparing numbers for 2020.
- iii) In the 2019 survey period, only 29% of the survey respondents have no comorbidities. This is a significant observations in terms of what we know about COVID-19 complications. We do not comparative figures for 2020.
- iv) At least 80% of the survey respondents feel that their diabetes condition is under control. This should have positive implications for the patient empowerment dimension of patient self-efficacy.

Table 11: Participants' diabetes history & status

Variable	2018/2019		2019/2020	
	N	%	N	%
Diabetes type				
Not sure	427	9.7	1 085	12.5
Type 1	875	19.9	1 451	16.7
Type 2	3 086	70.3	6 130	70.7
Duration living with/diagnosed diabetes				
<1 year	206	4.7	N/A	N/A
1 to 5 years	1 079	24.6	N/A	N/A
6 to 10 years	1 098	25.0	N/A	N/A
More than 10 years	2 005	45.7	N/A	N/A
Comorbidities				
0	1 273	29.0	N/A	N/A
1	1 233	28.1	N/A	N/A
2	1 157	26.4	N/A	N/A
3	494	11.3	N/A	N/A
≥4	231	5.3	N/A	N/A
Controlled/not under control				
No	355	8.1	783	9.0
Not sure	434	9.9	861	9.9
Yes	3 599	82.0	7 022	81.0

NB: Survey samples 2018/19 n=4,328 and 2019/20 n=8,666
N/A=questions inadvertently deleted from questionnaire.

3.1.3 Programme characteristics

Table 12 gives summary statistics on the characteristics of the diabetes management programmes. The data are for the 2019 survey period. Unfortunately, the relevant survey questions were inadvertently excluded for the 2020 survey period. So, we have no comparative numbers for 2020. The data describe: i) whether treatment tests are provided in open or closed network arrangements; ii) whether access to medication is obtained in open or closed network arrangements, and iii) whether the disease management programme includes a lifestyle programme.

The table (**Table 12**) can be summarised as follows:

- i) General benefits and routine medication are accessed via open network arrangements, for 56.9% and 47.1% of the respondents respectively.
- ii) General benefits and routine medication are accessed via closed network arrangements, for 25.7% and 44.6% of the respondents respectively.
- iii) 17.4% are not sure how they access general disease management benefit.
- iv) 8.4% of the respondents are not sure how they access their routine medication.
- v) 42.1% of the respondents report that they are not on a lifestyle programme.

Table 12: Programme characteristics

Variable	2018/2019		2019/2020	
	N	%	N	%
Access to disease management program				
Not sure	762	17.4	N/A	N/A
Closed network	1 129	25.7	N/A	N/A
Open network	2 497	56.9	N/A	N/A
Access to medication				
Not sure	367	8.4	N/A	N/A
Closed network	1 955	44.6	N/A	N/A
Open network	2 066	47.1	N/A	N/A
Lifestyle programme				
No	1 849	42.1	N/A	N/A
Yes	2 539	57.9	N/A	N/A

NB: Survey sample 2018/19 n=4,328

N/A=questions inadvertently deleted from questionnaire.

3.1.4 Spatial analysis on modes of accessing healthcare services

This sub-section has a strong bearing on HMI recommendations pertaining to medical scheme networks. The HMI recommended that prudential regulatory interventions for the private health financing sector, such as relaxing capital adequacy requirements, should be dependent on seeing more 50% of healthcare delivery systems being based on networks.

In this section we provide a description of disease management programme delivery modes from a spatial perspective. We also state some findings at the end of this characteristics section. The sub-section is split into:

- i) Benefit options rules for accessing disease management programme benefits, and
- ii) Benefit option rules for accessing medication benefits.

3.1.4.1 Spatial analysis: mode of accessing general benefits

Figure 12 is a heat map of South African provinces that illustrates, the proportion of beneficiaries reporting to access their general disease management benefits in closed network arrangements, in 2019. The proportion is calculated as a percentage of the sum of closed network and open network arrangements. The most significant observations are that:

- i) The three provinces with the highest prevalence of closed network arrangements are Limpopo, Free-State, and KwaZulu-Natal.
- ii) The three provinces with the lowest prevalence of closed network arrangements are North West, Eastern Cape, and Mpumalanga.

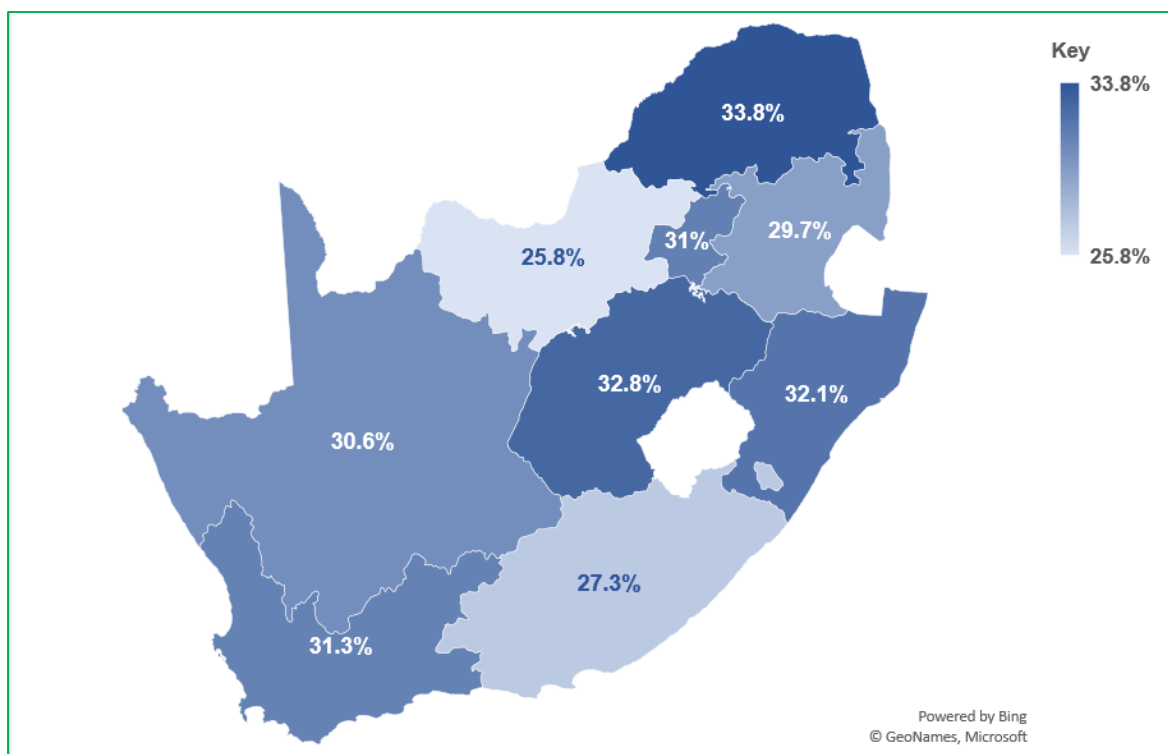


Figure 12: Mode of accessing general benefits – proportion in closed network (2019)

NB: The figures for 2020 are not available due to inadvertently excluding the relevant survey questions.

Figure 13 is a heat map of South African provinces that illustrates, the proportion of beneficiaries reporting to not to be sure how they access their general disease management benefits, in 2019. The proportion is calculated as a percentage of the sum of total survey responses. The most significant observations are that:

- i) The three provinces with the highest prevalence of unsure beneficiaries are Limpopo, Northern Cape, and KwaZulu-Natal.
- ii) The three provinces with the lowest prevalence of unsure beneficiaries are Free State, Mpumalanga, and Eastern Cape.

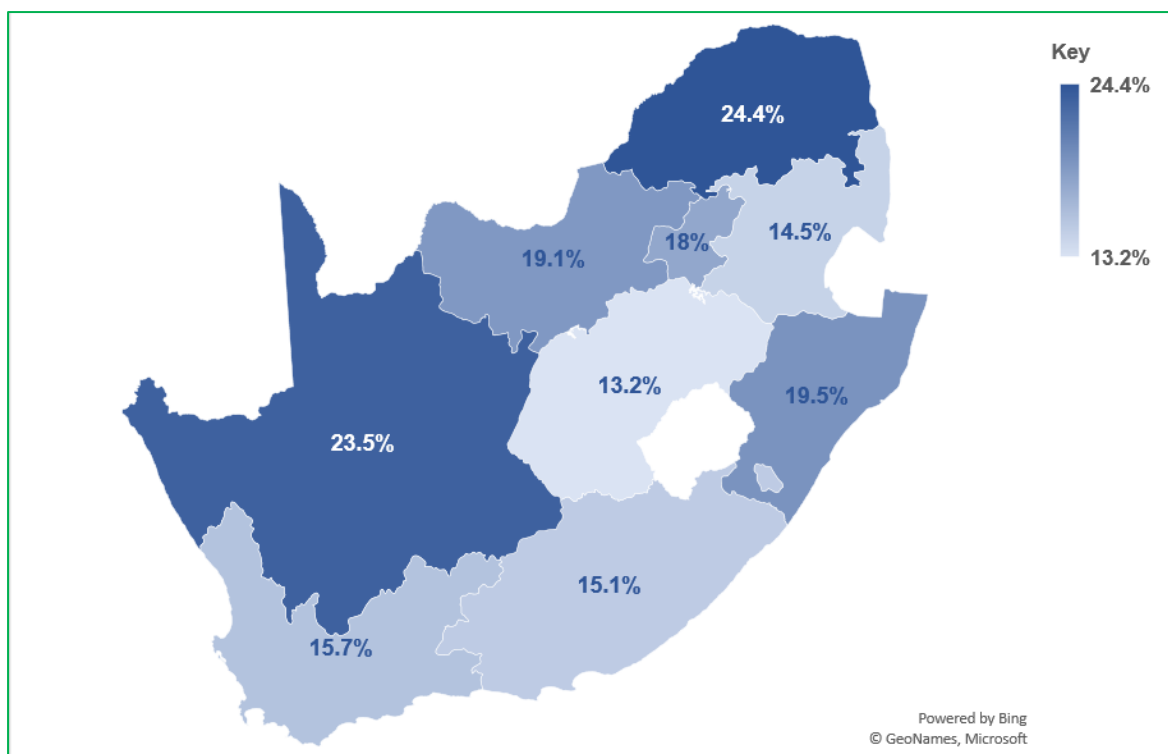


Figure 13: Survey respondents unsure of mode of access (2019)

NB: The figures for 2020 are not available due to inadvertently excluding the relevant survey questions.

3.1.4.2 Spatial analysis: mode of accessing medication

Figure 14 is a heat map of South African provinces that illustrates, the proportion of beneficiaries reporting to access their routine medication in closed network arrangements, in 2019. The proportion is calculated as a percentage of the sum of closed network and open network arrangements. The most significant observations are that:

- i) The three provinces with the highest prevalence of closed network arrangements are Free-State, Eastern Cape, and Limpopo.
- ii) The three provinces with the lowest prevalence of closed network arrangements are North West, Northern Cape, and Gauteng.

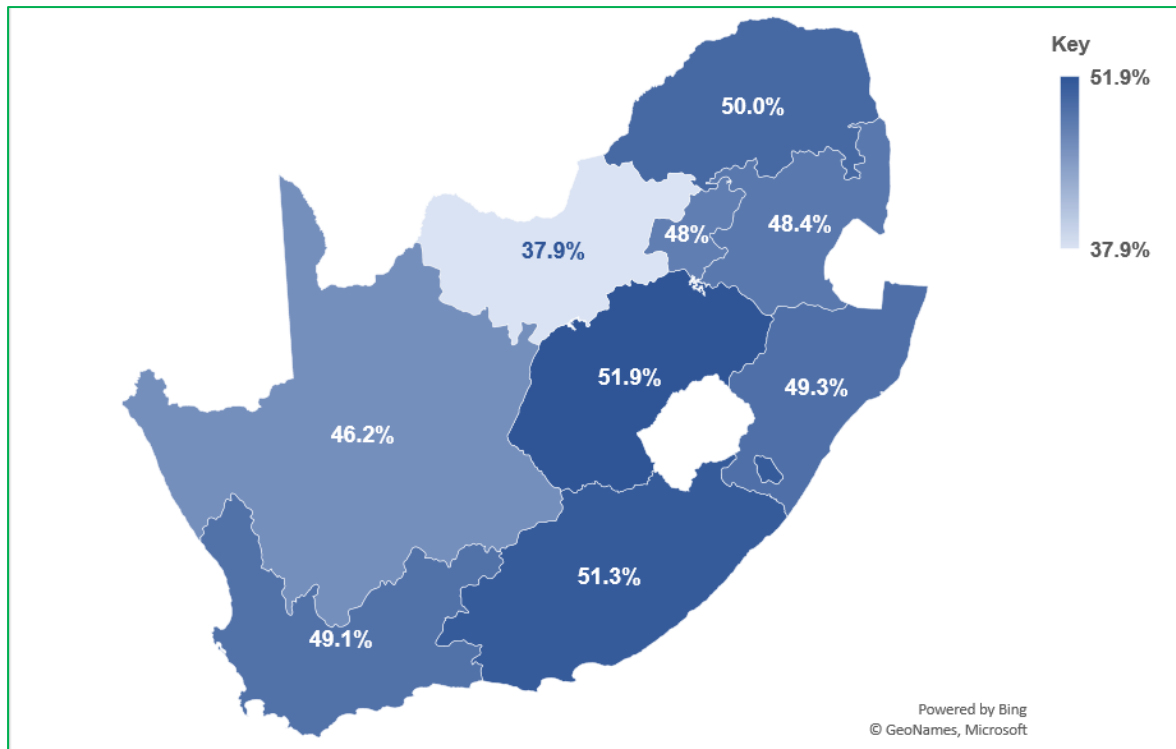


Figure 14: Mode of access to medication -- proportion in closed network (2019)

Figure 15 is a heat map of South African provinces that illustrates, the proportion of beneficiaries reporting to not to be sure how they access routine medication, in 2019. The proportion is calculated as a percentage of the sum of total survey responses. The most significant observations are that:

- i) The outlier with the highest prevalence of unsure beneficiaries is Northern Cape.
- ii) The three provinces with the lowest prevalence of unsure beneficiaries are Free State, Western Cape, and Eastern Cape.

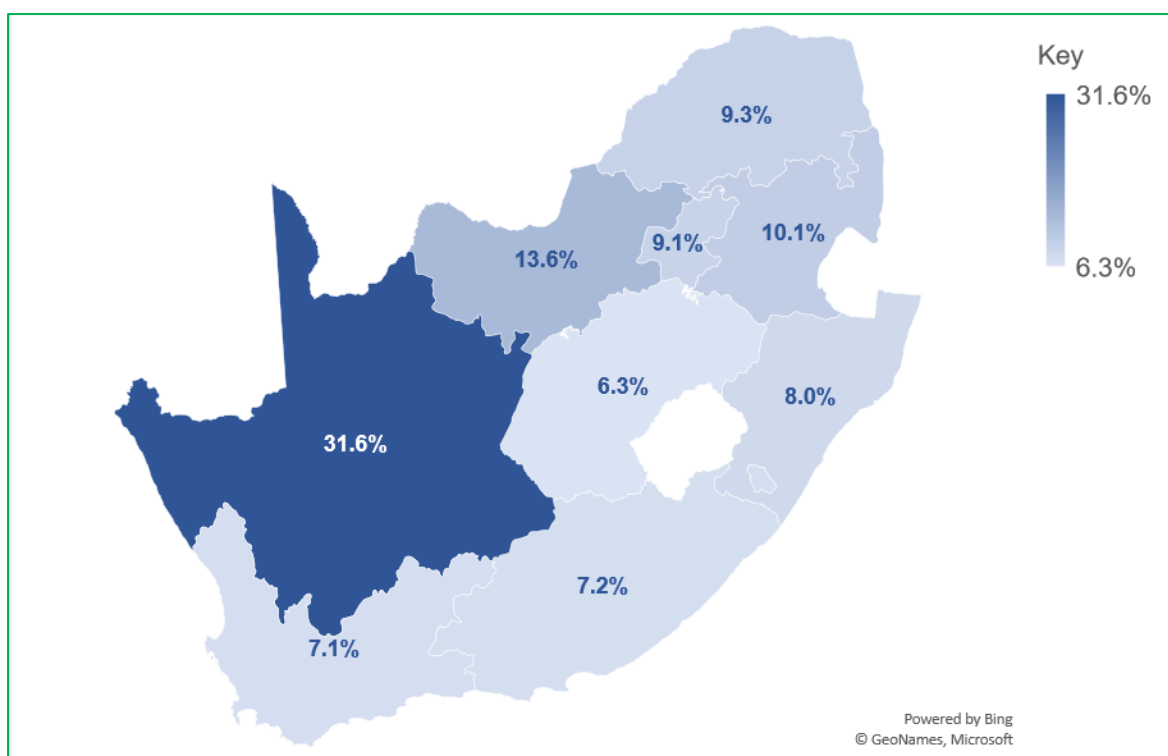


Figure 15: Medication – not sure if closed or open network (2019)

3.1.5 General characteristics of survey responses: key findings

3.1.5.1 Key findings: extrapolative properties

The sample of survey respondents can be considered to have similar a distribution as the target population. The sample can thus be used to extrapolate observations onto the population of beneficiaries living with diabetes in South African medical schemes. The finding is based on the following observations:

- i) The proportional distributions of males to females between the sample and target populations are similar.
- ii) The sample and target population have similar age distributions.
- iii) The distributions of beneficiaries across medical scheme size distributions in similar in the target population and the survey sample.

3.1.5.2 Key findings: demographic characteristics

Comparing the summary statistics on the characteristics of survey participants for both survey samples (2019 and 2020), the data are consistent. This suggests that the parameters used for the sample calculation, and the weighted sampling schema yielded accurate and consistent estimates for both periods. The education levels of the respondents were high. This observation is significant as level of education has an impact on patient experience and patient empowerment process outcomes. More than 60% of the respondents were at least 60

years old. This finding is also relevant for COVID-19 considerations, as this overlaps the age group most at risk for contracting of COVID-19 complications.

The fact that beneficiaries are from medical schemes different sizes, we will have to control for this size characteristics when conducting regression analysis. Otherwise we may make an invalid observation about patient experience, as we will be falsely imputing competition as having a marginal effect on patient and provider inter-personal engagements. A small proportion of survey respondents reported to live alone, so household size should have little negative impact on psychosocial self-efficacy dimension.

There was a higher prevalence of Type II diabetes among the survey respondents is consistent with prevalence in the true population. At least 70% have been diagnosed for at least 6 years. This will have an impact on the patient empowerment dimension on mastering diabetes self-management. Seventy-one percent of the respondents reported to have comorbidities, this is a significant observations in terms of what we know about COVID-19 complications. A high majority of the survey respondents felt that their diabetes condition is under control. This should have positive implications for the patient empowerment dimension of patient self-efficacy.

3.1.5.3 Key findings: programme characteristics

The results reflect concerning scenario where half of the survey respondents report that they access routine benefits in open network arrangements, and almost half aren't following lifestyle programmes. This scenario is of concern considering the policy agenda that the HMI recommendations carve out for the medical schemes industry. The HMI recommendations state that at least 50% of all medical schemes beneficiaries should access benefits through health delivery networks. It is concerning that only half of those most at risk for COVID-19 complications, access benefits through networks.

3.1.5.4 Key findings: spatial analysis on modes of accessing services

The three provinces with the lowest prevalence of closed network arrangements for accessing general disease management services are North West, Eastern Cape, and Mpumalanga. The three provinces with the lowest prevalence of closed network arrangements for accessing routine medication are North West, Northern Cape, and Gauteng. These are provinces where managed care networks ought to be prioritised for diabetes disease management.

The three provinces with the highest prevalence of unsure beneficiaries are Limpopo, Northern Cape, and KwaZulu-Natal. The outlier with the highest prevalence of unsure beneficiaries is Northern Cape. These are the provinces that marketing material for disease management programmes ought to be prioritised.

3.2 Patient Empowerment: Confirmatory & Exploratory Factor Analyses

Section 3.2 provides the results of the analysis on the construct validity of the structural relationship between the observed variables and the primary latent variables of patient empowerment. Specifically, the construct validity of the first-order patient empowerment construct. The patient empowerment variables are sourced from the patient experience survey responses. The primary latent variables of patient empowerment are: i) patient self-activation; ii) patient self-management; and iii) patient self-efficacy. We also comment of the key findings arising from the results.

3.2.1 Results of confirmatory & factor analyses

Figure 16 is a scree plot which used for factor reduction purposes. The scree-plot suggests that there should be three latent factors for describing the patient empowerment, using the patient experience survey variables as questionnaire items.

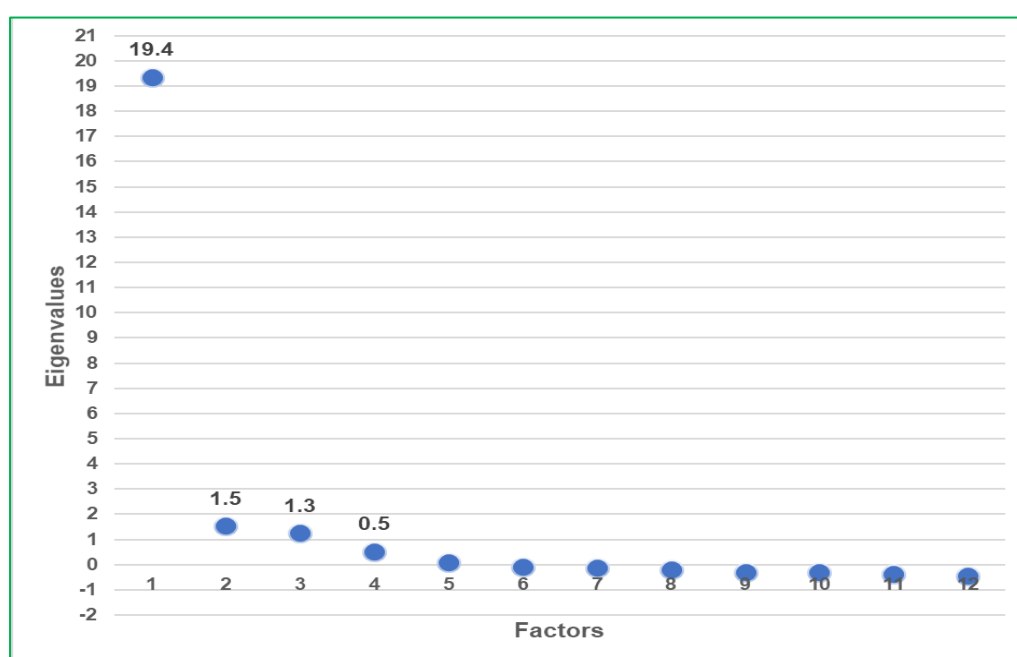


Figure 16: Scree plot -- factor reduction

Table 13 present the results of conducting confirmatory and exploratory factor analysis, which was carried out to establish the construct validity of the primary factor model on patient experience. After testing the theoretical link between survey items and patient empowerment. We conducted a rotated factor pattern analysis in conclusion of the exploratory factor analysis. Items were re-assigned across factors, and some items were excluded (yellow highlights).

Table 13: Result of confirmatory and exploratory factor analysis

Rotated Factor Pattern				
Item No.	Variable	Factor1	Factor2	Factor3
x1	Respect	0.70		
x2	Inclusive	0.69		
x3	Explained	0.63		
x4	Knowprescr	0.61		
x5	KnowResults	0.58		
x6	DiscussDiet		0.74	
x7	DiscussPhysic		0.74	
x8	DiscussManage		0.67	
x9	EmotionalSup			0.80
x10	Confident			0.79
x11	ConsistMess			0.51

Figure 14 shows the link between patient experience domains and patient empowerment domains. The link emerged from the covariance between the primary latent factors (empowerment domains), and the patient experience domains. The link is a result of the construct validation exercise using confirmatory and exploratory factor analysis.

Table 14: Link between patient experience & patient empowerment

Factors	Patient Experience Domains	Patient Empowerment Domains
Factor 1	Respect & Inclusive decisions	Patient Activation
Factor 2	Management of diabetes	Patient Self-management
Factor 3	Emotional & Psychological support	Patient Self-efficacy

3.2.2 Factor analyses: key findings

The construct validity of the measurement scale for patient empowerment has been tested. The first-order structural validity between latent variables and patient experience hold on an empirical basis.

3.3 Internal Consistency: Patient Empowerment First-Order Construct

Section 3.3 assess the internal consistency of the first-order patient empowerment construct. We use the standard Cronbach alpha test for estimating parameters for assessing internal consistency. We are effectively testing whether the patient experience responses are positively associated across all patient empowerment dimensions.

3.3.1 Internal consistency: Cronbach alpha

Table 15 and Table 16 provide the results of the Cronbach alpha test for internal consistency between the questionnaire items, across the patient empowerment domains. The test reflects internal consistency as the Cronbach is 0.92. Although its on the high side, there shouldn't be much redundancy in the model, as it is consistent with the findings from the research literature, we used in the concurrent validation of our empowerment measurement scale. Furthermore, we did not want to drop more items from the analysis, as items that are theoretically justified, should not be dropped merely for statistical fit purposes. This is why we conducted a confirmatory analysis and an exploratory analysis.

Table 15: Cronbach alpha for overall survey tool

Cronbach Coefficient Alpha	
Variables	Alpha
Raw	0.925846
Standardized	0.927019

Table 16: Cronbach alpha for survey tool items

Cronbach Coefficient Alpha with Deleted Variable				
Variable	Raw Variables		Standardized Variables	
	Correlation with Total	Alpha	Correlation with Total	Alpha
Respect	0.631815	0.92317	0.638748	0.924518
Inclusive	0.706122	0.918843	0.714723	0.919804
Explained	0.800947	0.913678	0.804948	0.91408
Knowprescr	0.691738	0.920113	0.695642	0.920997
DiscussDiet	0.751939	0.916026	0.745731	0.917852
DiscussPhysic	0.710646	0.919178	0.703993	0.920475
DiscussManage	0.777339	0.914254	0.773684	0.916079
EmotionalSup	0.753806	0.916013	0.750296	0.917563
Confident	0.778181	0.914195	0.774639	0.916018

3.3.2 Internal consistency: key findings

The internal consistency of the measurement scale holds.

3.4 Second-order Confirmatory Analysis: Patient Empowerment

Section 3.4 presents the results of the construct validity test on the relationship between: i) the second-order patient empowerment latent variable; ii) the first-order patient empowerment latent variables; and iii) patient report experience scores. Here we are testing if there is an empirical association that can back the theoretical framework we have postulated on the causal relationship between: i) patient experience; ii) patient

empowerment; and iii) sustainable treatment adherence (and presumably active patient retention on diabetes disease management programmes). We also provide key findings.

3.4.1 Second order confirmatory analysis

Table 17 and Table 18 report the covariance factor loading and residuals of the of the second order factor analysis on patient empowerment, respectively.

Table 17: Estimated Second Order Confirmatory Analysis Parameter Loading

Standardized Effects in Linear Equations						
Variable	Predictor	Parameter	Estimate	Standard error	t Value	Pr > t
item1	Respect	x1	0.72294	0.00821	88.0889	<.0001
item2	Inclusive	x2	0.78455	0.00689	113.9	<.0001
item3	Explained	x3	0.86774	0.00513	169.2	<.0001
item4	Knowprescr	x4	0.74818	0.00767	97.5087	<.0001
item5	DiscussDiet	x5	0.85103	0.00546	156	<.0001
item6	DiscussPhysic	x6	0.82681	0.00596	138.7	<.0001
item7	DiscussManage	x7	0.85269	0.00542	157.2	<.0001
item8	EmotionalSup	x8	0.90585	0.00449	201.6	<.0001
item9	Confident	x9	0.93748	0.00413	227.1	<.0001
f1	Patient Activation	x10	0.92878	0.00623	149.2	<.0001
f2	Self-management	x11	0.89054	0.00659	135.1	<.0001
f3	Self-efficacy	x12	0.84253	0.00699	120.5	<.0001

Table 18: Estimated Second Order Confirmatory Error Variances

Standardized Results for Variances of Exogenous Variables						
Variable Type	Variable	Parameter	Estimate	Standard Error	t Value	Pr > t
Latent	f4		1			
Error	e1	u1	0.47736	0.01187	40.2285	<.0001
Error	e2	u2	0.38448	0.01081	35.5769	<.0001
Error	e3	u3	0.24703	0.0089	27.7551	<.0001
Error	e4	u4	0.44023	0.01148	38.3421	<.0001
Error	e5	u5	0.27575	0.00929	29.6895	<.0001
Error	e6	u6	0.31639	0.00986	32.0925	<.0001
Error	e7	u7	0.27292	0.00925	29.5095	<.0001
Error	e8	u8	0.17943	0.00814	22.0462	<.0001
Error	e9	u9	0.12113	0.00774	15.6517	<.0001
Disturbance	e10	_Add1	0.13737	0.01157	11.877	<.0001
Disturbance	e11	_Add2	0.20693	0.01174	17.6239	<.0001
Disturbance	e12	_Add3	0.29015	0.01179	24.6172	<.0001

Table 19 reports the results of a Schmid-Leiman transformation of the standardised factor loads and residual. The purpose of the table is to describe the structural and the residual components of the second order model of patient empowerment. The model's results suggest that the second-order measurement scale meets construct validity on an empirical level. The reason for this, is that the construct explains the covariance structure more than the residual components.

Table 19: Schmid-Leiman transformation of factor loadings

First Order Factor	Observed Variable	High Order Factor Loading (%)	Residualized First Order Loading (%)	Structural Component (%)	Error Component (%)
Patient Activation	Respect	45.1	7.2	52.3	47.7
	Inclusive	53.1	8.5	61.6	38.4
	Explained	65.0	10.3	75.3	24.7
	Know prescr.	48.3	7.7	56.0	44.0
Patient Self-management	Discuss Diet	57.4	15.0	72.4	27.6
	Discuss Physic. Ex.	54.2	14.1	68.4	31.6
	Discuss Manage	57.7	15.0	72.7	27.3
Patient Self-efficacy	Emotional Support	58.2	23.8	82.1	17.9
	Confident	62.4	25.5	87.9	12.1

NB: What the transformation shows is the latent variables which are explained the most by patient-centeredness and empowerment are “emotional support” and “confidence”.

Figure 17 confirms what we have learned from the Smidt-Leiman model, the only difference is that the figure (**Figure 17**) uses unstandardized covariance factor loadings. The **Figure 17** clearly shows pathed structural relationship, from patient empowerment latent variables to the observed items of patient experience.

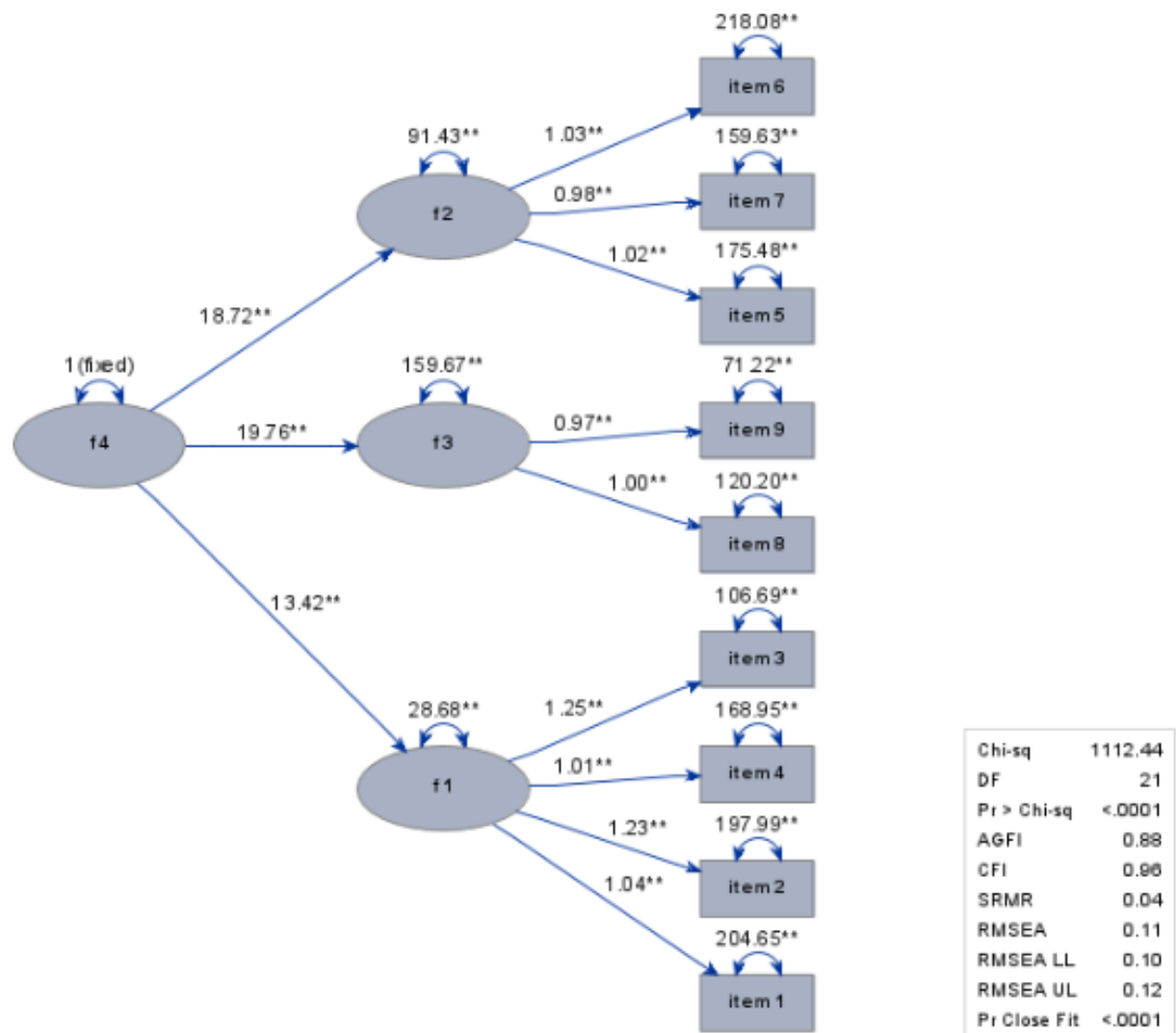


Figure 17: Second-order Confirmatory Factor Analysis plot (unstandardized output)

Note: N=4,328

f1 is factor 1 = patient activation

f2 is factor 2 = Patient self-management

f3 is factor 3 = Patient self-efficacy

f4 is factor 4 = Patient empowerment

Items 1 to 9 are items that were measured to derive latent factors explaining patient empowerment.

Table 20 provides the estimated parameters of model fit, for the second order confirmatory factor analysis. All the estimated parameters, except for two, comply with best practice for model fit.

Table 20: Estimated model fit parameters for second-order Confirmatory Factor Analysis

Parameter	Our model	Best practice
Absolute Index		
Chi-Square	Sensitive to sample size	>0.05
Standardized RMR (SRMR)	0.036	≤0.08
Parsimony Index		
RMSEA Estimate	0.1096	0≤0.08
Incremental Index		
CFI	0.96	≥0.95
Bentler Comparative Fit Index	0.9613	>0.9
Bentler-Bonett NFI	0.9606	>0.9

3.4.2 Second-order confirmatory analysis: key findings

The second order latent factor of patient empowerment shares a causal relationship with patient experience variables.

3.5 Patient Experience, Empowerment & Treatment Adherence

Section 3.5 reports the following results: i) a descriptive analysis of patient experience and patient empowerment scores; and ii) a descriptive analysis relating patient satisfaction to patient experience and patient empowerment. We also provide a description how patient satisfaction related to patient treatment adherence. We draw key findings at the end of the section.

3.5.1 Patient experience and empowerment scores

Figure 18 reflect patient empowerment and patient experience scores for 2019 and 2020. The highest performing dimension is the patient activation dimension, and the lowest performing dimension is the patient self-efficacy dimension. Overall patient empowerment scores are 76 and 74, for 2020 and 2019 respectively. Emotional support in the self-efficacy dimension dropped from a score of 71 in 2019 to 67 in 2020.

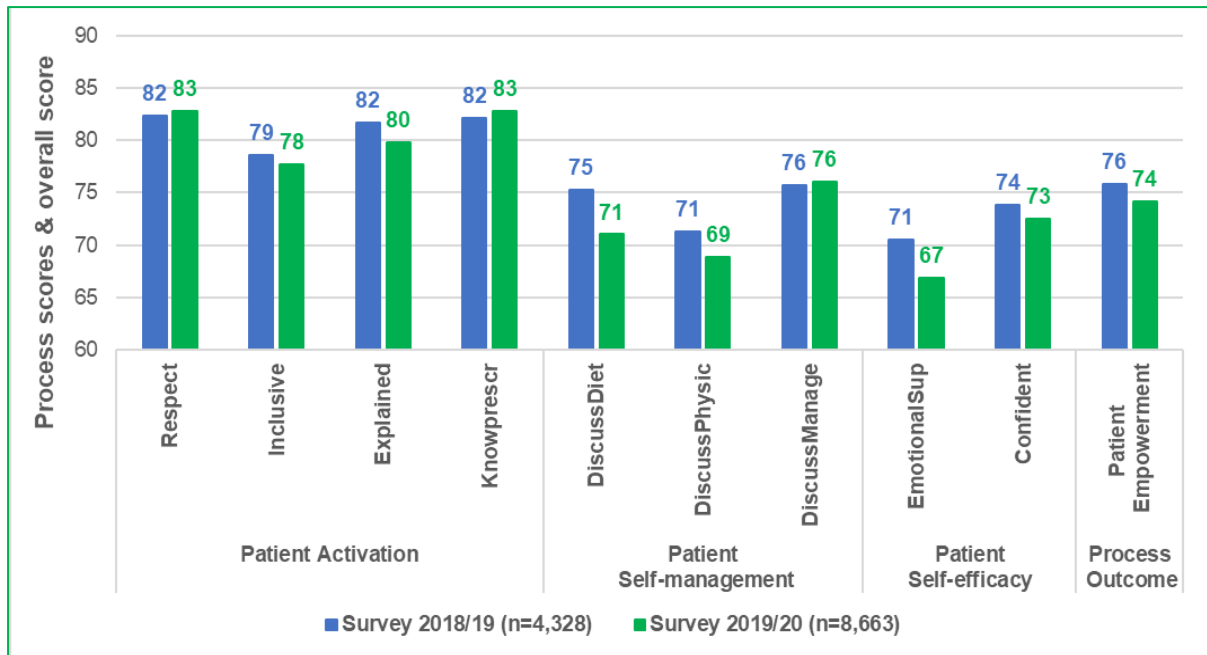


Figure 18: Patient experience & empowerment scores (2018/19 & 2019/20)

3.5.2 Patient satisfaction outcomes

Figure 19 and Figure 20 describe patient satisfaction for 2019 and 2020, respectively. Both figures show that beneficiaries are mostly likely to recommend the services they receive from their disease management programs. At least 78% of all beneficiaries will recommend the services they get from their caregiver.

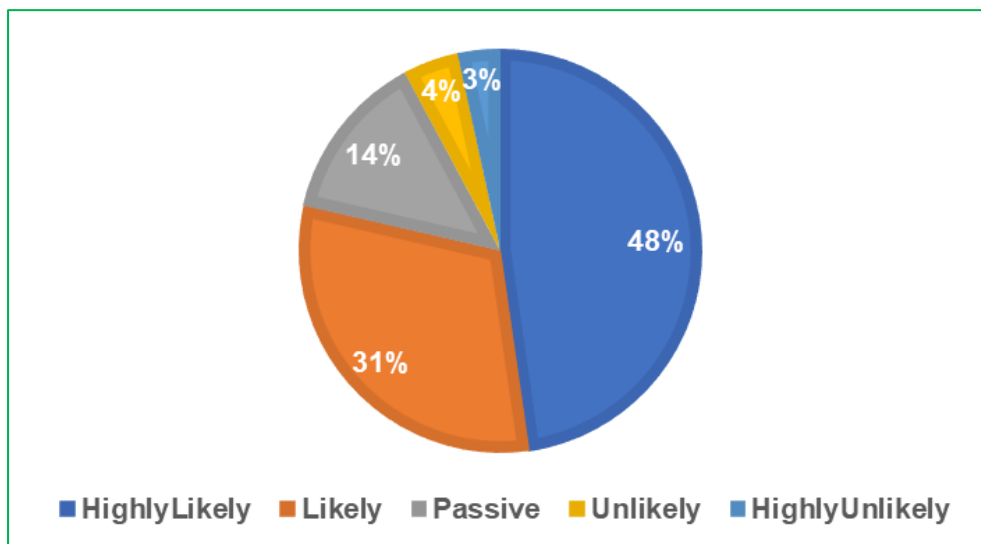


Figure 19: Patient satisfaction/likelihood of recommending services (2018/19)

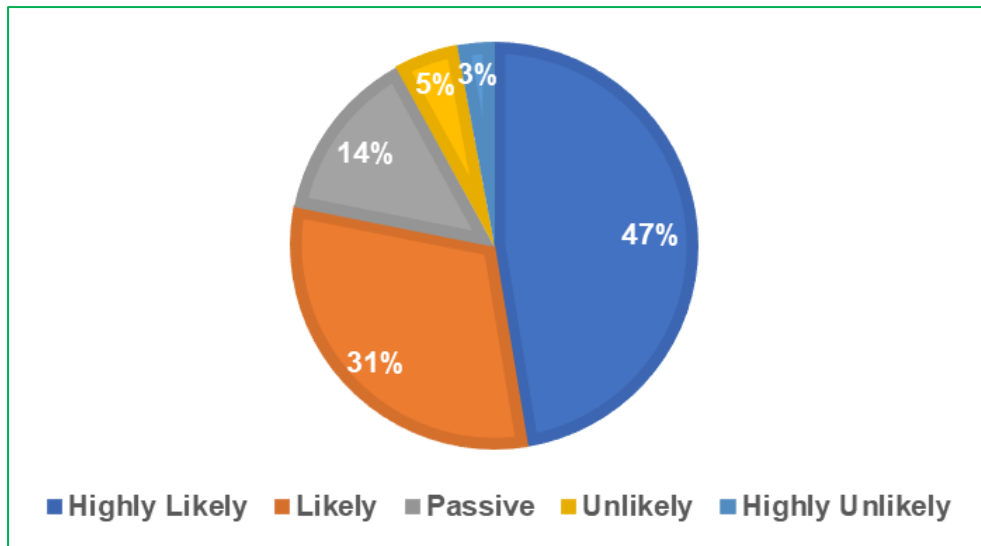


Figure 20: Patient satisfaction/likelihood of recommending services (2019/20)

Figure 21 shows that beneficiaries who are highly unlikely to recommend services, have a patient empowerment score of 43 in 2019, and 37 in 2020. Beneficiaries who are highly likely to recommend services had a patient empowerment score of 87 in 2019, and one of 86 in 2020.

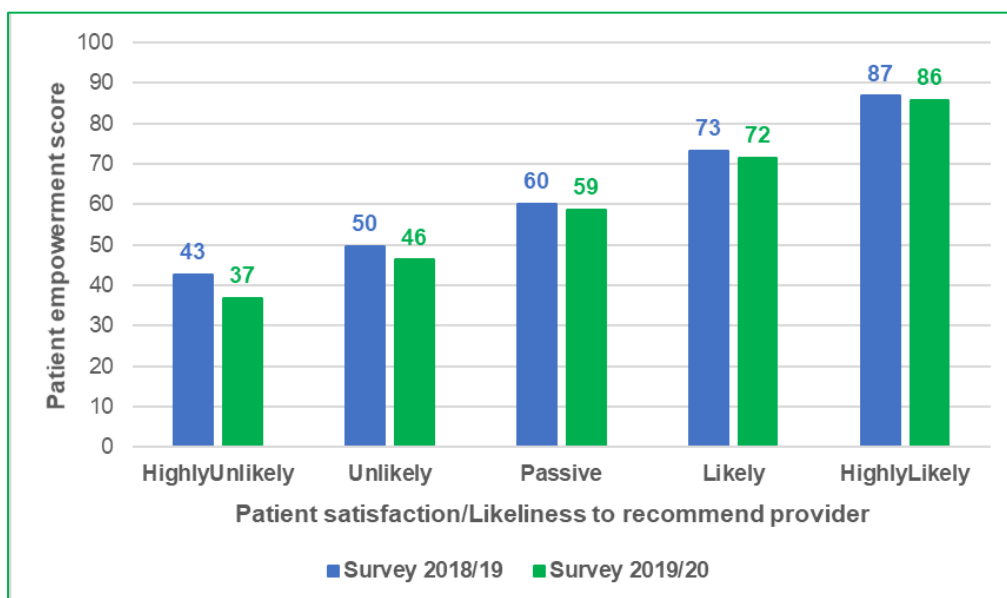


Figure 21: Patient satisfaction vs. patient empowerment (2018/109 & 2019/20)

Table 21 reports patient satisfaction is a process outcome, relative to quality of health processes. The processes reported are treatment adherence related indicators, and patient empowerment (patient-centered) initiatives. The data stratified by respondents who reported they are highly likely (satisfied) to recommend the disease management programme, relative to those that are highly unlikely (unsatisfied) to do so. The data are for both the 2019 and 2020 survey periods. The table describes the following results:

- i) Satisfied beneficiaries were more likely to be contacted by their disease management program than unsatisfied beneficiaries, in 2019. In 2020 the likelihood of being contacted was greater for unsatisfied beneficiaries.
- ii) Satisfied beneficiaries were more likely to attend doctor's visits than unsatisfied beneficiaries, in 2019. In 2020 unsatisfied beneficiaries were more likely to attend routine doctor's visits.
- iii) The patient empowerment scores for satisfied beneficiaries are in the high 80s for both years. Patient empowerment scores dropped from 43 in 2019 to 37 in 2020.

Table 21: Patient Satisfaction vs quality processes (2018/19 vs 2019/20)

Variable	Survey 2018/19		Survey 2019/20	
	Highly likely	Highly unlikely	Highly likely	Highly unlikely
	Adherence	Adherence	Adherence	Adherence
Times Contacted	2.3	1.5	2.6	3.1
Visits	3.2	2.6	3.0	3.7
Blood Test	3.1	2.5	2.2	2.1
Body Mass	3.0	2.1	2.3	2.5
Cholest Level	3.0	2.4	2.1	2.0
Foot Exam	2.7	2.1	2.3	2.9
Kidney Check	2.2	1.6	2.1	2.4
Eye Screening	2.4	1.9	2.0	2.4
Empowerment score	87	43	86	37

3.5.3 Patient experience, empowerment & satisfaction: key findings

Patient empowerment reduced by two points from a score of 76 in 2019 to 74 in 2020. This may have been caused by the reduction in performance associated with 'emotional support item' (patient experience). Emotional support falls with the patient empowerment dimension of patient self-efficacy. That said, at least 78% of all beneficiaries will recommend the services they get from their caregiver.

The trend for treated adherence changed from 2019 to 2020. Beneficiaries who reported to be most likely to recommend their disease management program (satisfied beneficiaries), were less likely to than unsatisfied beneficiaries in 2020. The same pattern occurred for the number of times per year contacted by the disease management programme for check-ups. That said, patient empowerment scores still dropped for unsatisfied

patient in 2020. This suggests that, since CMS began conducting patient experience surveys, medical schemes might have been asking unsatisfied beneficiaries to participate more actively in routine treatment adherence.

3.6 Treatment Outcome of Patient Empowerment Process

Section 3.6 provides the results of a causal inferential analysis using a structural equation model (SEM). The analysis finds the average treatment effect on the treated of patient empowerment on routine treatment adherence visits, by medical schemes beneficiaries living with diabetes. We also provide findings on the practical policy implications of the inferred causal effects.

3.6.1 Treatment outcome: Structural Equation Model

Figure 22 is a path diagram that provides the structure of the mediation problem we are controlling for in the structural equation model (SEM). We want to estimate the direct relationship of the treatment effect of patient empowerment and treated adherence. However, there are unseen effects that have a confounding effect on the treatment. These variables cause selection bias and render the estimate of the treatment effect inaccurate. By controlling for these effects, we will estimate the true impact of patient empowerment on treatment adherence.

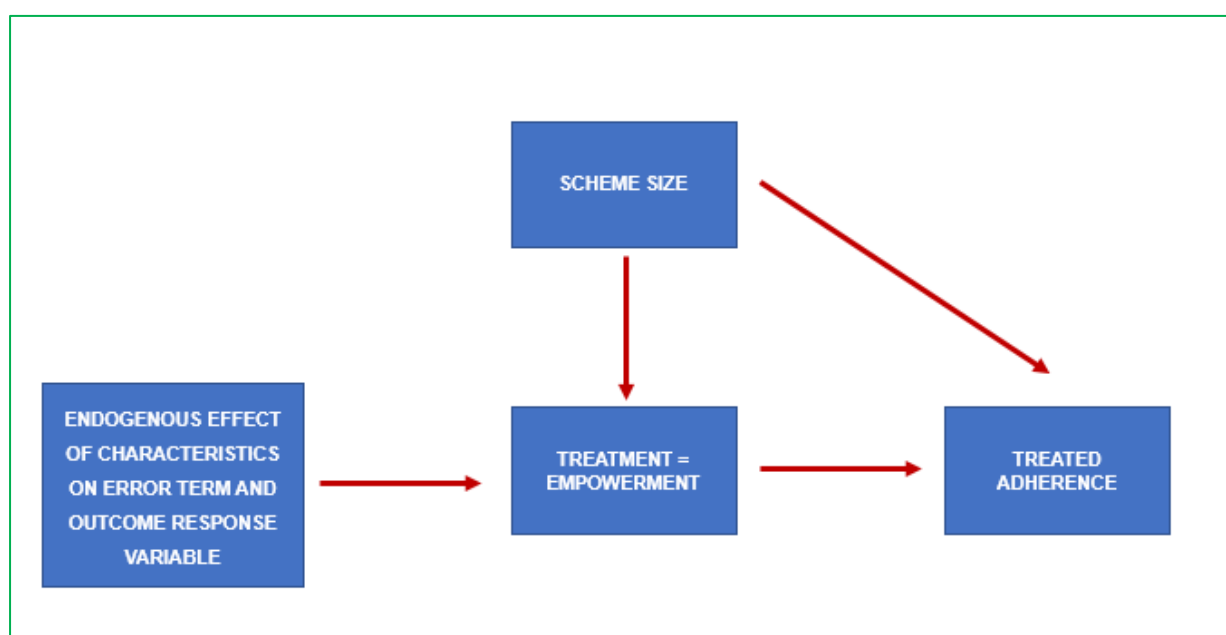


Figure 22: Controlling for scheme size and balanced matching on treatment groups

Table 22 shows the different dummy variables we used to control for the confounding effect. The levels describe the differences in the characteristics of the survey respondents that may introduce confounding (selection bias).

Table 22: Propensity score matching characteristics and instrumental variable

Class Level Information		
Variable	Levels	Values
Size	4	Large; Medium; Small; Very Large
Education	5	Diploma / Bachelors Degree; No formal education; Post-Graduate; Primary education; Secondary education
Type_diabetes	3	I am not sure / do not know; Type 1; Type 2
Gender	2	Female; Male

Figure 23 shows the result of the attempt to balance the differences between respondents in the treatment group (empowered beneficiaries), and respondents in the control group (disempowered beneficiaries). The median propensity ratios are equal for the two groups, as a result of matching the characteristics of respondents in the two groups. Thus, there will be minimal selection bias (confounding).

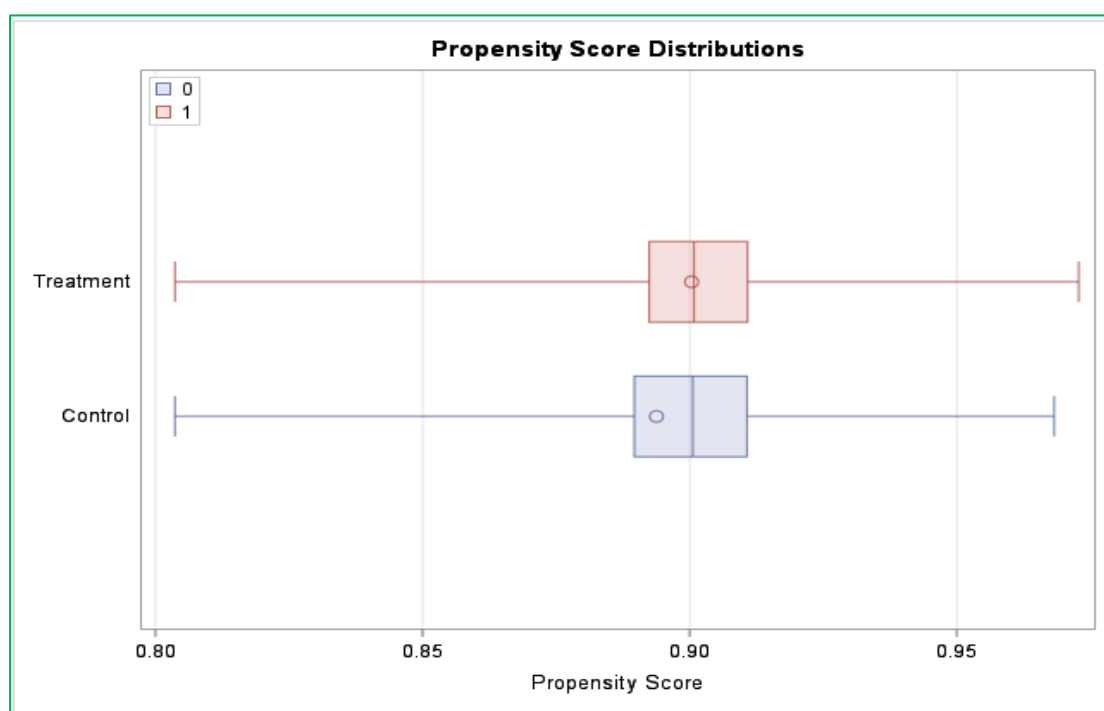


Figure 23: Propensity score distributions

Table 23 provides the results of SEM. The results show that the average treatment effect of empowerment on treated, is 1.41 more routine treatment visits than the untreated group. This means that patient empowerment has an impact on quality of health outcomes.

Table 23: Structural equation model results (survey 2018/19)

Analysis of Causal Effect						
Parameter	Treatment Level	Estimate	Robust Std error	Wald 95% Confidence Limits		Z Pr > Z
POM	1	3.1156	0.0125	3.0911	3.1401	248.93 <.0001
POM	0	2.7055	0.0473	2.6129	2.7982	57.24 <.0001
ATE		0.4101	0.0489	0.3143	0.5059	8.39 <.0001

NB: POM = potential outcome means.

3.6.2 Treatment outcome: key findings

Patient empowerment has a beneficial effect on quality in health for diabetes disease management programs.

3.7 Decomposition of Treatment Outcomes

Section 3.7 reports the results of a Blinder-Decomposition that was applied to the survey data on patient experience. We decomposed differences in routine treatment adherence visits, using patient experience variables as predictors. We did this provide a counterfactual analysis between those that were empowered, and a group that was disempowered. We used weighted patient experience scores to adjust for inherent differences in respondent characteristics. This allowed the analysis to focus on differences that relate purely to self-reported patient experience. These differences are finding that are pertinent for allocating resources for, or prioritising specific interventions, the supervision and accreditation of diabetes disease management programmes.

3.7.1 Decomposition of group outcomes: analysis

Figure 24 reports patient empowerment scores for each patient empowerment dimension, by treatment group (empowered) and control group (not empowered) results, for the 2019 survey responses. The figure (**Figure 24**) also provides the differences in patient experience scores. The largest difference between treatment and control group empowerment scores, is for the self-efficacy dimension, followed by the self-management dimensions.

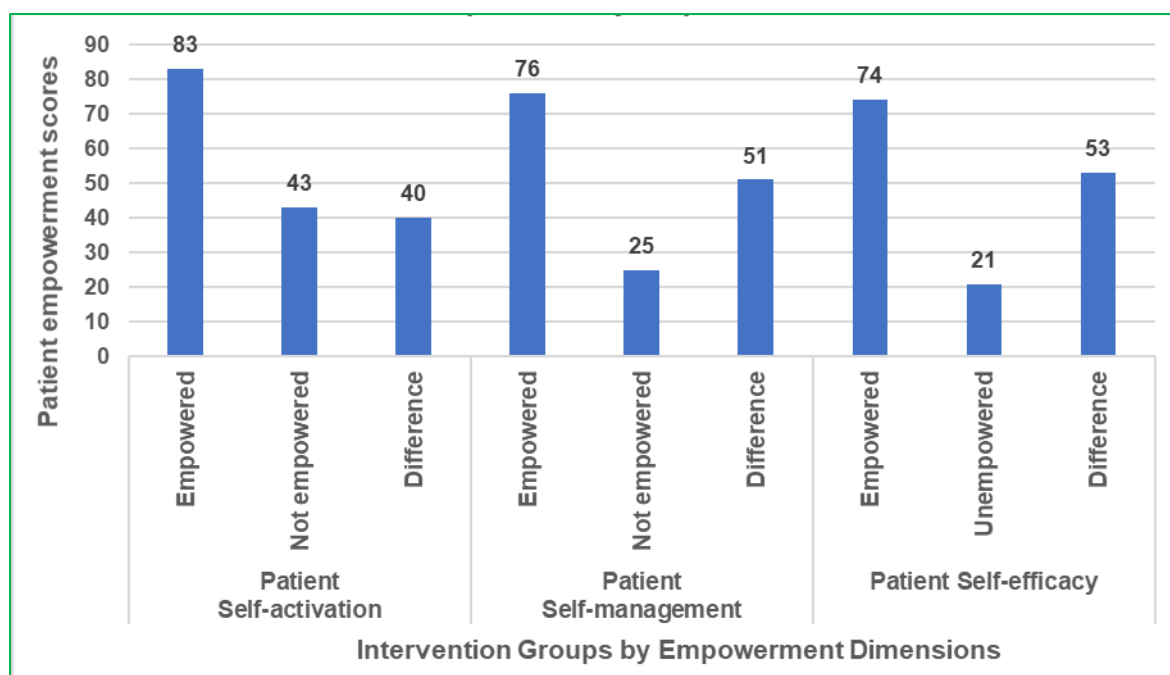


Figure 24: Patient empowerment scores by treatment group & control group (2018/19)

Figure 25 provides a decomposition of the patient empowerment score differences between treatment and control groups. The differences are allocated to patient experience variables within each patient experience dimension. The results show that each element of a dimension, has a relatively equal impact on the score differences between the treatment and control groups.

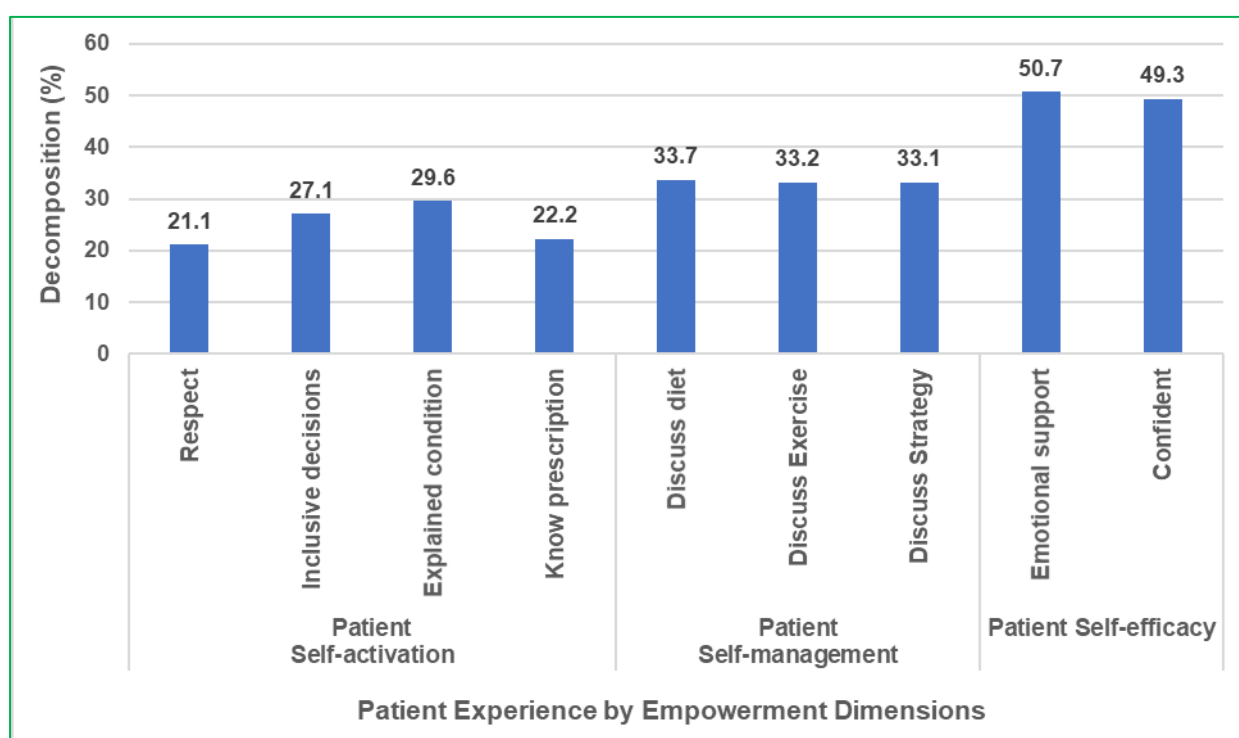


Figure 25: Decomposition of treatment & control group differences (2018/19)

3.7.2 Decomposition of Outcomes: key findings

We report the findings by patient empowerment dimensions below.

1. Patient self-activation dimension

- 1.1 The counterfactual (treatment vs control group) difference for the patient self-activation was 40.
- 1.2 This large score difference suggests that emphasis should be placed on improving patient experience scores for the self-activation of beneficiaries living with diabetes.
- 1.3 The score difference is informed by self-reported patient experience responses for: i) being treated with respect and dignity; ii) participating in inclusive decision processes; iii) the condition being explained in an understandable manner; and iv) having a good knowledge of prescription.
- 1.4 All the patient experience responses had similar impact on the scored differences between empowered and disempowered groups.

2. Patient self-management dimension

- 2.1 The counterfactual (treatment vs control group) difference for the patient self-management was 51.
- 2.2 This large score difference suggests that emphasis should be placed on improving patient experience scores for the self-management of beneficiaries living with diabetes.
- 2.3 This score difference is higher than the score difference for patient self-activation. This suggests that priority should be placed on this dimension for regulatory responsive action.
- 2.4 The score difference is informed by self-reported patient experience responses for: i) discussing the diet with the caregiver; ii) discussing exercise plan with the caregiver; and iii) discussing the self-management strategy with the caregiver.
- 2.5 All the patient experience responses had similar impact on the scored differences between empowered and disempowered groups.

3. Patient self-efficacy dimension

- 3.1 The counterfactual (treatment vs control group) difference for the patient self-efficacy was 53.
- 3.2 This large score difference suggests that emphasis should be placed on improving patient experience scores for the self-efficacy of beneficiaries living with diabetes.

- 3.3 This score difference is the highest out of all the patient empowerment dimensions. This suggests that patient self-efficacy should be the most prioritised item for regulatory responsive action.
- 3.4 The score difference is informed by self-reported patient experience responses for: i) emotional support; and ii) confidence in controlling the diabetes condition.
- 3.5 All the patient experience responses had similar impact on the scored differences between empowered and disempowered groups.

4. DISCUSSION: RELEVANT POLICY IMPLEMENTATION

Disseminating finding on Patient Experience and Patient Empowerment Surveys for disease management programs, is beneficial for transparency and putting medical schemes' beneficiaries at the centre of the private health funding and delivery system. According to the Health Market Inquiry findings and recommendations, it is critical that before mandatory standardised base package is implemented and for the completeness of anti-adverse selection interventions, that more than 50% of medical schemes' beneficiaries receive health services from performance rated healthcare delivery networks. If the contracting and purchasing of in network health services are informed by Patient Experience and Patient Empowerment information, then value-add must be the policy outcome in managed care markets.

Disseminating research findings arising from Patient Reported Experience Measure (PREM) surveys, will go a long way to meeting the HMI recommendations. One such recommendation is that the CMS should develop a performance metrics on the value-add of DSP and provider networks contracted with administrators and medical schemes. PREM surveys report quality outcomes from the perspective of consumers. It is vital that managed competition finds its way to the managed care market in the private medical schemes industry.

This type of valuable work should inform the criteria for registering management care organisations that provide disease management programs. Further to this, PREMs should be used to provide valuable objective information to inform the prospective Multi-lateral Negotiation Forum's price determination outcomes. A window of opportunity has presented itself as the industry seeks negotiate tariffs for COVID-19 healthcare services. This opportunity should be used to test the viability of a primary package that is responsive to the market need for dreaded diseases (non-communicable diseases). Evidence abounds internationally, on how non-communicable diseases have resulted in relatively worse COVID-19 outcomes for communities that are socially-economically deprived.

For PREMs to be used as a source of objective information on the value-add of disease management programs, it is crucial that the industry is engaged to develop a generic measurement scale for chronic conditions. This ought to be a consultative process led by the CMS. This collaborative effort has become urgent as the world discovers that chronic conditions complicate COVID-19 infections.

Further to this, it might be wise to allow indemnity funds seeking to migrate to the medical schemes environment to register chronic disease benefits that would be in line with COVID-19 prescribed minimum benefits. Disease management programs identified for chronic conditions that are known to present COVID-19 complications should be considered as a base package. One is even tempted to recommend that this should be the makings of a base Low-Cost Benefit Options (LCBO) that should have expanded benefits over a period, as an exemption criterion. The prescribed primary care benefit package should be used as a yardstick, in the instant that such LCBO exemptions are sought.

The Competition Commission's recommendation that there should be an OMRO that measures quality health outcomes. The focus of OMRO's data collection and analysis ought to be on clinical quality outcomes. The work should primarily be focused on patients and healthcare professionals as market agents. Thus, OMRO will be predominantly concerned with the supply-side of the private healthcare market. When it comes to patient centered analyses, the measurement techniques mentioned by the HMI recommendations are based on Patient Reported Outcome Measure Surveys (PROMs). PROMs are ordinarily concerned with collecting patient opinions on clinical outcomes. These PROM questionnaires would for example, probe the post health intervention/procedure functionality of a patient after a hip-replacement.

Patient Reported Experience Measure (PREMs) are more focused on the inter-personal inter-action between the patient and the healthcare professional. PREMs are more focused on the relationship than the science of healthcare, in order to achieve a collaborative relationship that empowers the patient to be proactive and participate equally in the health seeking episode. This report shows that when PREM responses are placed within a patient empowerment measurement construct, it becomes easier to identify patient self-activation, self-management and psychosocial self-efficacy dimensions that lead to better treatment adherence and health outcomes. Understanding where to improve interventions for patients with chronic conditions, improves the self-management of conditions which predominantly takes place at home and not at clinical facilities. This realization establishes a needed paradigm shift from 'traditional acute approach' to patient empowerment approaches.

This paradigm shift is amenable to consumer directed policy interventions that are crucial for managed competition. PREMs that can improve patient empowerment for those living with chronic conditions should be used to inform the accreditation standards, and measurement criteria used for the accreditation of disease management programs. The dissemination of Patient Experience and Patient Empowerment results will make the market more accountable to medical schemes' beneficiaries.

The previous HMI findings in 2003/04 left the private health industry without a bargaining chamber for effecting a coordinated price mechanism. This left beneficiaries with dwindling guaranteed cover as health inflation soared. Not allowing the regulator the policy instrument of measuring performance for registering complying market agents and informing consumers; will weaken managed competition in the managed care market. If the regulator does not conduct patient experience surveys, and report on patient empowerment, may results in another market inquiry. In this instance, it is possible that the regulator may be accused of a lack of market coordination again.

5. REFERENCES

- ANDERSON, R. M., FITZGERALD, J. T., GRUPPEN, L. D., FUNNELL, M. M. & OH, M. S. 2003. The Diabetes Empowerment Scale–Short Form (DES-SF). *Diabetes Care*, 26, 1641-1642.
- ANDERSON, R. M. & FUNNELL, M. M. 2005. Patient empowerment: reflections on the challenge of fostering the adoption of a new paradigm. *Patient Education and Counseling* 57, 153–157.
- ANDERSON, R. M. & FUNNELL, M. M. 2010. Patient empowerment: myths and misconceptions *Patient Education and Counseling*, 79, 277–282.
- ANDERSON, R. M., FUNNELL, M. M., FITZGERALD, J. T. & MARRERO, D. G. 2000. The Diabetes Self-Empowerment Scale: A measure of psychosocial self-efficacy. *Diabetes Care*, 23, 739–743.
- AUJOULAT, I., YOUNG, B. & SALMON, P. 2012. The psychological processes involved in patient empowerment. *Orphanet Journal of Rare Diseases*, 7.
- BARR, P. J., SCHOLL, I., P., B., FABER, M. J., ELWYN, G. & MCALLISTER, M. 2015. Assessment of Patient Empowerment - A Systematic Review of Measures. *PLoS ONE* 10.
- BATTERSBY, M. W., ASK, A., REECE, M. M., MARKWICK, M. J. & COLLINS, J. P. 2003. The Partners in Health scale: The development and psychometric properties of a generic assessment scale for chronic condition self-management. *Australian Journal of Primary Health*, 9, 41-52.
- BODENHEIMER, T., LORIG, K., HOLMAN, H. & GRUMBACH, K. 2002. Patient self-management of chronic disease in primary care. *JAMA*, 288 2469-2475.
- BROWN, T. A. 2016. Confirmatory Factor Analysis for Applied Research. New York: Guilford Publications, Inc.
- CHEN, M.-F., WANG, R.-H., CHENG, C.-P., CHIN, C.-C., STOCKER, J., TANG, S.-M. & CHEN, S.-W. 2011. Diabetes Empowerment Process Scale: development and psychometric testing of the Chinese version. *Journal of Advanced Nursing*, 67, 204–214.
- CMS 2019. Patient Experience: A Prospective & Summative Evaluation on the Perspectives of Medical Scheme Beneficiaries with Diabetes. Pretoria: Council for Medical Schemes.
- CMS 2020. Accreditation Standards for Managed Care Organisations. Standards and Measurement Criteria. Pretoria.
- EHLERT, A., WEIN, T. & ZWEIFEL, P. 2017. Overcoming resistance against managed care – insights from a bargaining model. *Health Economics Review*, 7, 1-15.
- ENTHOVEN, A., FUCHS, V. R. & SHORTELL, S. M. 2019. To control costs expand managed care and managed competition. *JAMA*, 322, 2075-2076.
- EPSTEIN, R. M., FISCELLA, K., LESSER, C. S. & STANGE, K. C. 2010. Why the nation needs a policy push on patient-centered health care. *Health Affairs*, 29, 1489–1495.
- GERTEIS, J., IZRAEL, D., DEITZ, D., LEROY, L., RICCIARDI, R., MILLER, T. & BASU, J. 2014. Multiple chronic conditions chartbook: 2010 medical expenditure panel survey data. Rockville, MD: Agency for Healthcare Research and Quality.

- HEALTH MARKET INQUIRY 2019. Final findings and recommendations report. Pretoria, South Africa: Competition Commission, South Africa.
- HIBBARD, J. H., STOCKARD, J., MAHONEY, E. R. & TUSLER, M. 2004. Development of the Patient Activation Measure (PAM): Conceptualizing and measuring activation in patients and consumers. *Health Services Research*, 39.
- HO, K. & LEE, R. S. 2019. Equilibrium provider networks: bargaining and exclusion in health care markets. *American Economic Review* 109, 473–522.
- HOLMSTROM, I. & ROING, M. 2010. The relation between patient-centeredness and patient empowerment: A discussion on concepts. *Patient Education and Counseling*, 79 167–172.
- JANN, B. 2008. The Blinder-Oaxaca decomposition for linear regression models. *The Stata Journal*, 8, 453-479.
- LAMM, M. & YUNG, Y.-F. 2017. Estimating causal effects from observational data with the CAUSALTRT Procedure. Cary, North Carolina: SAS Institute Inc.
- LEKSELL, J., FUNNELL, M., SANDBERG, G., SMIDE, B., WIKLUND, G. & WIKBLAD, K. 2007. Psychometric properties of the Swedish Diabetes Empowerment Scale. *Scandinavian Journal of caring Sciences*, 21, 247–252.
- LEUNG, L. B., VARGAS-BUSTAMANTE, ARTURO; MARTINEZ, A. E., CHEN, X. & RODRIGUEZ, H. P. 2018. Disparities in diabetes care quality by English language preference in community health centers. *Health Services Research* 53, 509-531.
- MCALLISTER, M., DUNN, G., PAYNE, K., DAVIES, L. & TODD, C. 2012. Patient empowerment: The need to consider it as a measurable patient-reported outcome for chronic conditions. *BMC Health Services Research*, 12.
- PAN, J., LIU, D. & ALI, S. 2015 Patient dissatisfaction in China: What matters. *Social Science & Medicine* 143 1, 45-153.
- PETKOV, J., HARVEY, P. & BATTERSBY, M. 2010. The internal consistency and construct validity of the partners in health scale: validation of a patient rated chronic condition self-management measure. *Quality of Life Research*, 19 1079-1085.
- RADEMAKERS, J., NIJMAN, J., VAN DER HOEK, L., HEIJMANS, M. & RIJKEN, M. 2012. Measuring patient activation in the Netherlands: translation and validation of the American short form Patient Activation Measure (PAM13). *BMC Public Health*, 12.
- RIVM 2015. Dutch health care performance report 2014. In: VAN DEN BERG, M., DE BOER, D., GIJSEN, R., HEIJINK, R., LIMBURG, L. & ZWAKHALS, S. (eds.). Bilthoven, The Netherlands: National Institute for Public Health and the Environment
- RYAN, A. M., GEE, G. C. & GRIFFITH, D. 2008. The effects of perceived discrimination on diabetes management. *Journal of Health Care for the Poor and Underserved* 19 149–163.
- SHIU, A. T. Y., WONG, R. Y. M. & THOMPSON, D. R. 2003. Development of a reliable and valid Chinese version of the Diabetes Empowerment Scale. *Diabetes Care*, 26, 2817–2821

- VELDMAN, K., REIJNEVELD, S. A., LAHR, M. M. H., UITTENBROEK, R. J. & WYNIA, K. 2017. The Partners in Health scale for older adults: design and examination of its psychometric properties in a Dutch population of older adults. *Health Expectations*, 20, 601–607.
- WAGNER, E. H. 1998. Chronic disease management: what will it take to improve care for chronic illness? *Effective Clinical Practice*, 1, 2-4.
- WAGNER, E. H., AUSTIN, B. T., DAVIS, C., HINDMARSH, M., SCHAEFER, J. & BONOMI, A. 2001. Improving chronic illness care: translating evidence into action. *Health Affairs*, 20, 64-78.