

CURRENT PERSPECTIVES OF SOUTH AFRICAN ORTHOPAEDIC SURGEONS TO THE DIRECT ANTERIOR APPROACH IN TOTAL HIP ARTHROPLASTY

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ABSTRACT

Background: Despite the global increase in popularity for the use of the Direct Anterior Approach (DAA) for Total Hip Arthroplasty (THA), the current beliefs and reasons for its use and disuse amongst South African orthopaedic surgeons is not well understood.

Objective: To determine the perspectives regarding DAA compared to other surgical approaches to THA.

Methods: We conducted an anonymous online survey sent to all current members of the South African Orthopedic Association (SAOA).

Results: The response rate was 24.25% (n=194). There were 76 (39.18%) respondents that have performed DAA (DAA Performers) and 118 (60.82%) that have never performed DAA (DAA non-performers). A proportion of 50% and 11.84% of DAA performers were between 30 to 45 years and older than 60 years of age, respectively ($p<0.000$). The DAA is the preferred approach to THA for 36.84% (n=28) of DAA performers, whilst 63.16% (n=48) prefer an alternative approach. Both DAA performers who prefer DAA and those who prefer alternative approaches consider DAA more satisfactory for length of hospital stay ($p<0.000$) and short-term functional outcomes ($p=0.002$) compared to other surgical approaches. For DAA non-performers, the primary reasons for not performing DAA THA were inexperience in surgical technique (72.09%), increased operative time (12.79%), unsatisfactory outcomes (27.91%) and learning curve (67.44%). There were 5 (18.52%) and 30 (70.33%) surgeons who have been in clinical practice for more than 10 years that do and do not intend to use DAA in the future, respectively ($p<0.000$).

Conclusion: The trends of the adoption of the DAA by South African orthopaedic surgeons show increasing popularity, similar to patterns seen in the United Kingdom and the United States of America. Younger surgeons are more likely to perform the DAA THA whilst more experienced surgeons are less likely to deviate from their current standard of practice.

Key words: Direct Anterior Approach, Total Hip Arthroplasty, Surgical approach, Current perspectives

INTRODUCTION

Total Hip Arthroplasty (THA) has proven to be the most effective treatment for patients presenting with end-stage hip pathology, leading to an

improvement in pain and functional outcomes (1–6) the low friction arthroplasty (LFA). Currently, approximately one million THA are performed annually worldwide (7). Globally, the demand for THA is ever growing (8, 9). In Australia, there were

643,567 THA performed in 2018, which is 83.4% higher than the number of THAs performed in 2003 (8). Kurtz *et al.* (9) predicted that in the United States of America (USA), the number of Total Joint Arthroplasties (TJA) performed would increase to 4 million by the year 2030 (9).

Despite the success and high usage of THA, there are still many areas of controversy. One of the hotly debated issues is that of the optimal surgical approach to THA. Historically, the most commonly used approaches are the Anterolateral (AL), Direct Lateral (DL) and Posterior Approach (PA) (10). However, this is rapidly changing with the growing interest in Minimally Invasive Surgery (MIS) especially the Direct Anterior Approach (DAA). An analysis of 24 registries and approximately 3.1 million THAs highlighted a significant disparity in surgical approach preferences (3). The PA, for instance, is done in less than 20% of cases in Switzerland and Eastern Europe while it is performed for more than 50% of THAs in Sweden, Denmark, the United Kingdom, and the Netherlands. In the United Kingdom, Sweden, and New Zealand, however, the Direct Anterior Approach (DAA) is routinely performed by less than 5% of surgeons (11).

Recently, the DAA has piqued much interest due to reported benefits including, a decrease in Length of Hospital Stay (LOS) (2,12–15), superior early functional outcomes (5,16–18) decreased demand for postoperative opioid analgesia (2–4), earlier, safe return to sport and previous recreational activity than other more traditional hip approaches (21,22).

In spite of the above mentioned advantages, the DAA is not the panacea of surgical approaches to the hip, as it has been associated with a significant learning curve (23–26) an increased risk of lateral femoral cutaneous nerve neuropraxias (15,27), higher rates of intra-operative femoral fractures (15,28), greater rates of early femoral revision (29,30) (LFCN and an increased risk of wound complications (31,32).

In a 2020 survey of British Hip Society (BHS) members, 49.3% of respondents had used the DAA for THA, however, 42.9% of the surgeons who had used it were no longer using it at the time of the survey (33). In a poll done at the 2018 meeting of the American Association of Hip and Knee Surgeons (AAHKS), the most common approach for routine THA was the PA (47%), followed closely by the DAA (40%). This showed a 28% increase in usage of the

DAA in under a decade amongst AAHKS members (34). In an email survey of members of the AAHKS the following year, it was noted that over 56% of respondents were comfortable performing the DAA (35). These surgeons overall had less years in practise than those who did not perform the DAA suggesting that the newer generation of surgeons were more likely to adopt this approach (35).

We, therefore, decided to evaluate the current opinions and beliefs of South African orthopaedic surgeons regarding the use of the DAA for THA.

MATERIALS AND METHODS

An anonymous online questionnaire was created, and the subsequent survey was sent to all current, active members of the South African Orthopaedic Association (SAOA) in January 2021. A reminder mail was sent at 4 and 8- weeks after the original mail. No incentive was given to participants, and all participants were requested to accede their voluntary consent before starting the questionnaire. An introduction to the survey made it clear that all answers strictly related to the experience and opinion of the responder and did not inform nor impact current or future patient care. Participants were able to exit the survey at any point during participation.

Lime survey was used to design the template for this questionnaire. Lime survey is a free and open-source, online statistical survey application in which questionnaire templates can be added to and removed by authors. The questions presented to members were derived from a similar questionnaire sent out by the American Association of Hip and Knee Surgeons (AAHKS) in 2019 (34).

The first section of the questionnaire reviewed the demographic information of the respondents. This included gender, age (years), years in clinical practice and the South African province in which they are currently practising and whether they had completed a fellowship in lower limb joint arthroplasty. Options of preferred approach to THA included: DAA, direct superior approach, lateral or modified lateral approach, PA, and SPAIRE approach. Respondents were asked whether they had performed the DAA. We classified responders who had never attempted the DAA for THA as "DAA Non-performers" and subsequently classified responders who had previously performed the DAA for an elective, primary THA as "DAA Performers."

DAA performers were asked how many THA's they performed annually, and what percentage of THAs they performed using the DAA. If respondents did not perform DAA, i.e., DAA non-performers, they were asked for the reasons for not performing DAA as well as whether they would consider performing DAA in the future.

The reasons for not performing DAA included: unsatisfactory outcomes, an alternative approach was more desirable, increased operative time, inexperience in surgical technique, perceived increase in complications, DAA is industry-driven, higher infection and complication rate, femoral nerve damage, and mal-positioning of the prosthesis, better outcomes with other approaches including decreased revision rate, and poor femoral access resulting in inadequate component cementing.

Using three-level Likert scale respondents who said they had performed DAA, were asked the following questions, to compare DAA to other approaches based on, blood loss (millilitres), operation time (minutes), level of satisfaction, short term outcomes, long term outcomes, overall complication rates, rates of Prosthetic Joint Infection (PJI), dislocation rates, Peri-Prosthetic Fractures (PPF), leg length examination and acetabulum component position.

Results were tabulated and compared across demographic sub-groups. An N-1 two-proportion test was used to compare proportions of binomial categorical variables. Chi-squared testing was used to compare relationships between categorical variables. Statistical significance was set at $p < 0.05$. The statistical software used for analysis was R 4.0.2 for Windows Copyright (C) 1989, 1991 Free Software Foundation, Inc with interface R Studio Version 1.3.959.

RESULTS

Out of 800 SAOA members, 201 responded to the survey the response rate was ultimately 24.25% ($n=194$) as 7 individuals did not consent to voluntary participation in the survey. There were 82 (42.93%) participants aged 30 - 45 years, 67 (35.08%) participants aged 45 - 60 years and

41 (21.47%) respondents who were older than 60 years. Eighty three (43.92%) participants, 49 (25.93%) and 17 (8.99%) who practiced in Gauteng province, the Western Cape and Kwazulu-Natal respectively. There were 46 (24%) respondents who had completed a Lower Limb Joint Reconstruction fellowship, while 146 (76%) respondents had not. The preferred approach for THA was the DAA in 28 (14.58%), Lateral or Modified Hardinge Approach in 97 (50.52%) and Posterior Approach in 64 (33.33%). Further demographic details are elucidated in (Table 1).

Table 1

All survey responder demographics (n=201)

Surgeon characteristics	No. (%)
Age (years)	
<30	1 (0.52)
30-45	82 (42.93)
45-60	67 (35.08)
>60	41 (21.47)
Province of practice	
Eastern Cape	17 (8.99)
Free State	7 (3.7)
Gauteng	83 (43.92)
KwaZulu-Natal	17 (8.99)
Limpopo	2 (1.06)
Mpumalanga	8 (4.23)
Northern Cape	2 (1.06)
North West	4 (2.12)
Western Cape	49 (25.93)
Years of clinical practice	
≤ 1	19 (9.9)
2-4	22 (11.46)
5-10	44 (22.92)
>10	107 (55.73)
Completed lower limb reconstruction fellowship	
Yes	46 (24)
No	146 (76)

There were 118 (60.82%) respondents that had never performed DAA (DAA non-performers). Correspondingly, 76 (39.18%) respondents who had performed the DAA (DAA performers). Currently 28 (36.84%) of respondents perform the DAA as their preferred THA approach.

DAA performers

There were 17 (22.67%) DAA performers who do more than 100 THAs annually, 21 (28%) who perform between 51 and 100, and 10 (13.33%) who do 10 THAs or less each year. Eighteen (24%) of DAA performers reported that they utilize the DAA for more than 75% of their THA, while 11 (14.67%) choose the DAA for 26-50% of THAs and 42 (56%) do the DAA preferentially for less than a quarter of their hip joint replacements.

DAA performers were asked under what circumstances they would not consider DAA for THA and 63 (84%) respondents reported revision arthroplasty; 61 (81.33%) said for complex hip pathology; 41 (54.67%) respondents in obese patients; 28 (37.33%) in patients with acetabular protrusion and 35 (46.67%) in patients undergoing THA for hip dysplasia. Further details are elucidated in (Table 2). Of the DAA performers 39 (53.42%) reported that less than a third of their patients requested the DAA, while 9 (12.33%) stated that between a third and half of their patients did.

Table 2

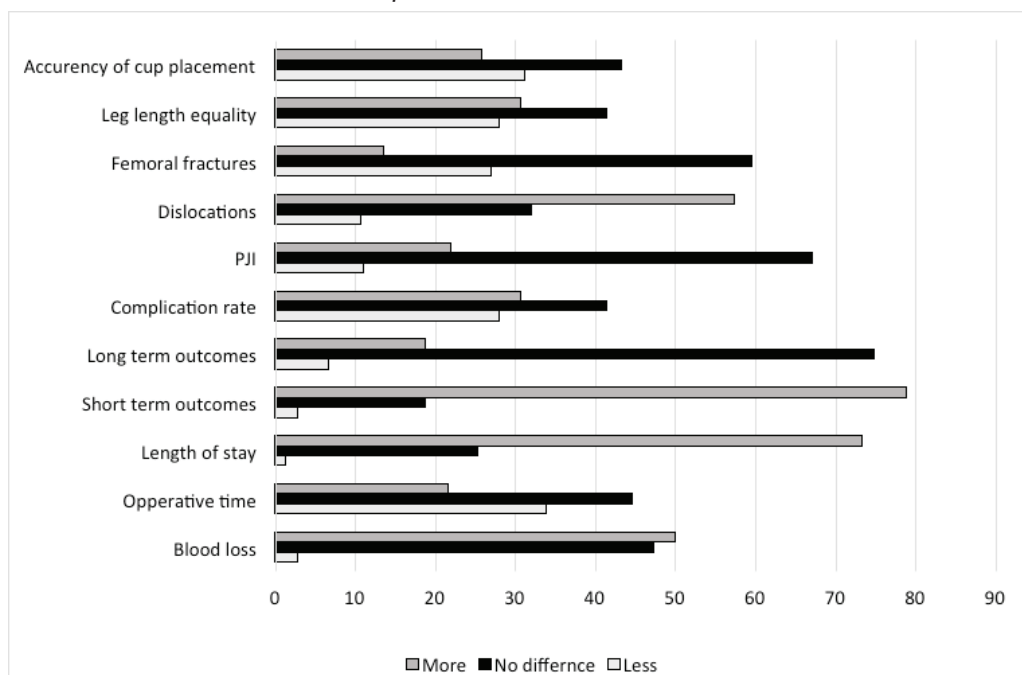
Patient considerations that would lead current DAA performers (n=76) to use an alternative approach for THA

Patient factors	% of surgeons (n)
Revision arthroplasty	84% (63)
Complex hip pathology	81.3% (61)
Obesity	54.6% (41)
Acetabular protrusion	46.6% (35)
Hip dysplasias	8% (6)
None	6.6% (5)
Other	1.33% (1)

There were 37 (50%) respondents who reported that DAA was more satisfactory than other surgical approaches for limiting blood loss in THA while 25 (33.8%) and 5 (6.7%) reported that the DAA was less satisfactory for length of hospital stay and short-term functional outcome respectively. There were 55 (78.7%) respondents who stated that the DAA was superior to other approaches for short-term functional outcomes. There were 49 (67.1%) DAA performers who believed that there was no difference in the likelihood of PJIs between DAA and other approaches while 44 (59.5%) said there was no difference in post-operative femoral fractures (Figure 1).

Figure 1

Perceived peri-operative factors comparing satisfaction rates of DAA and other THA approaches for DAA performers (n=76) (%)



In the group of DAA performers, there was a cohort who had tried the DAA but 48 (63.16%) still preferred an alternative approach routinely (Table 3). Among the DAA performers, 26 (34.21%) preferred the lateral or modified Lateral Approach, while 20 (26.32%) preferred the Posterior Approach (PA).

The survey assessed opinions of DAA performers compared to those that favored

an alternative approach with respect to peri-operative factors. There were 19 (39.58%) respondents that ultimately preferred an alternative approach who believed that the DAA had superior blood loss control while no surgeons who preferentially used the DAA believed the DAA had inferior blood loss (p=0.016).

Table 3
Preferred approach to THA of surgeons that have performed DAA (n=76)

Surgical approach	n (%)
Direct Anterior Approach (DAA)	28 (36.84)
Direct Superior Approach	1 (1.32)
Lateral or Modified Lateral Approach	26 (34.21)
Posterior Approach (PA)	20 (26.32)
PA preferred but currently doing 55-45 split between PA and DAA	1 (1.32)
SPAIRE approach	0 (0)

There were 12 (44.44%) of participants who preferentially used the DAA who believed the DAA had superior operative times while only 4 (8.33%) alternative approach respondents thought another approach's operative time was superior (0.000). 88.89% of

those that use the DAA preferentially believed that short-term functional outcomes are better, while 15 (55.56%) believed that there was no difference in long-term functional outcomes between the DAA and alternative approaches (Figure 2).

Figure 2

Satisfaction of DAA across peri-operative factors for DAA performers that prefer DAA THA (n=28) to alternative surgical approaches (n=48)

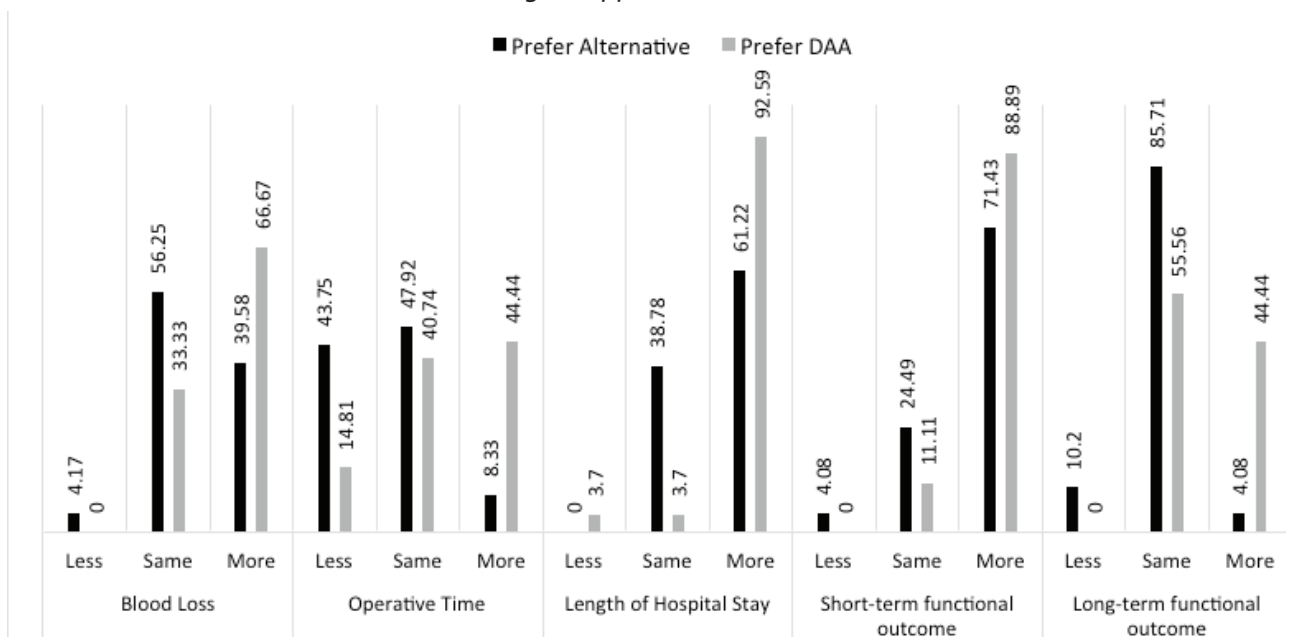
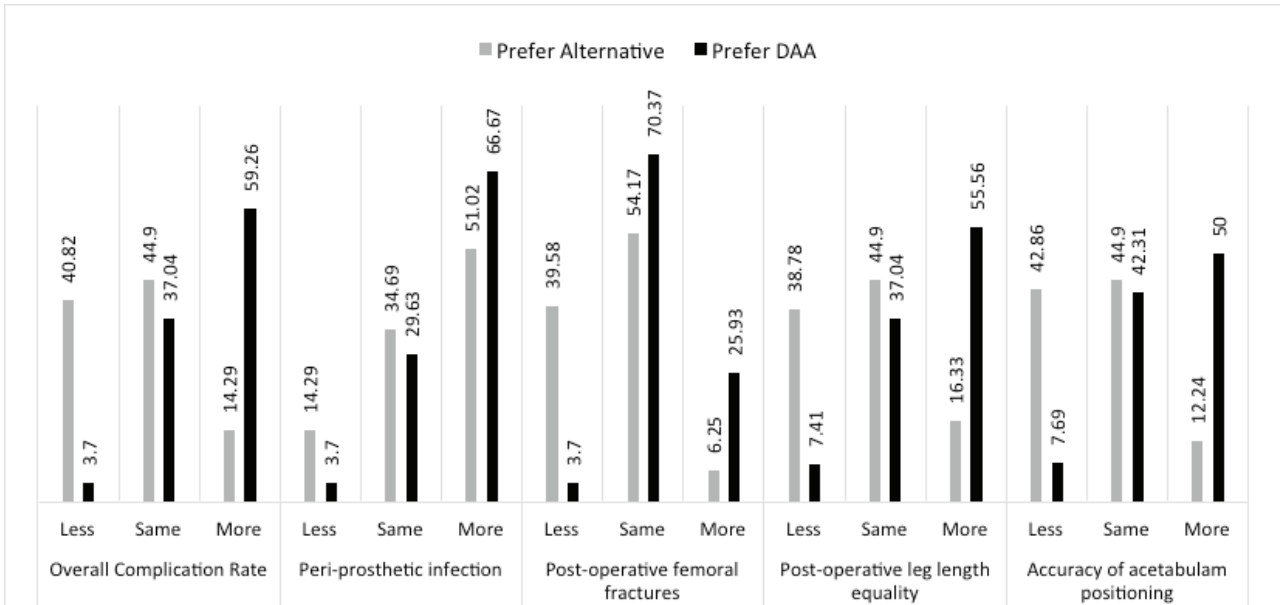


Figure 3 compares DAA performers who use the DAA as their preferred approach (n=28) to those surgeons who prefer an alternate approach. Those surgeons who use the DAA as their preferred approach believe it is associated with lower volumes of blood loss (66.67%) (p=0.016), shorter length of hospital stay (92.59%) (p<0.000), better short-term

functional outcomes (88.89%) (p=0.002), although 55.56% believe long term functional outcomes are the same (p<0.000). 55.56% believe the DAA results in a more accurate post-operative leg length equality, while 50% believe it is associated with more accurate placement of the acetabular cup (p<0.000).

Figure 3

Satisfaction after DAA compared across post-operative outcomes for DAA performers that prefer DAA THA (n=28) to alternative surgical approaches (n=48)



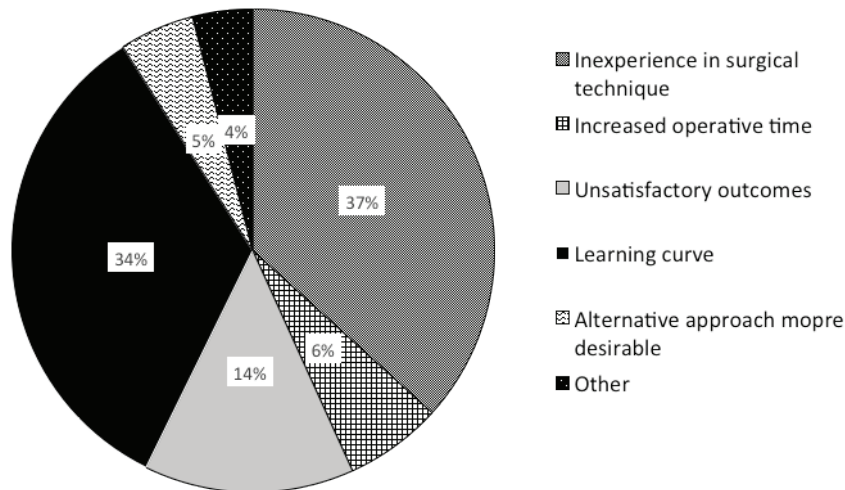
Of the DAA performers who prefer an alternative approach, 56.25% believe that blood loss (p=0.016), operative time (47.92%) (p<0.000), long-term functional outcomes (85.71%) (p<0.000) and the risk of peri-prosthetic infection (74.47%) (p<0.000) are similar to other approaches and that no advantage is ultimately inferred by the DAA. However, even surgeons who prefer an alternative approach believe the DAA is associated with a shorter length of hospital stay (61.22%) (p<0.000) and has more favourable short term functional outcomes (71.43%) (p<0.002)

DAA non-performers

Participants who had never performed the DAA for THA, DAA non-performers, were questioned about what the primary reason for never performing the DAA for THA was: 62 (72.09%) cited inexperience in the surgical technique; 11 (12.79%) reported increased operative time; 24 (27.91%) stated unsatisfactory outcomes, 58 (67.44%) reported concerns around the perceived learning curve and 9 (10.47%) reported that an alternative approach was more desirable (Figure 4).

Figure 4

Primary reasons for DAA non-performers not performing DAA THA (n=48)



Comparison of DAA-performers and DAA non-performers

In this study, DAA performers were more likely to be younger than DAA non-performers. There were 45 (38.14%) DAA non-performers and 38 (50%) DAA performers who were 30 – 45 years old, 32 (27.12%) DAA non-performers and 9 (11.84%) DAA performers who were older than 60 years old (p<0.000). This study also highlighted that more experienced surgeons and surgeons with more time in clinical practice were less likely to

be DAA performers. There were 69 (58.47%) DAA non-performers and 38 (50%) DAA performers who have been in clinical practice > 10 years (p<0.000).

DAA performers were statistically significantly more likely to have performed an orthopaedic fellowship after their orthopaedic training with 35% having performed a lower limb joint reconstruction fellowship (p<0.000), while 83.05% of DAA non-performers had not performed a lower limb joint reconstruction fellowship (Table 4).

Table 4

Characteristics of DAA performers (n=76) vs DAA non-performers (n=118)

Surgeon characteristics	DAA performers (n= 76) (%)	DAA non-performers (n= 118) (%)	P-value
Age (years)			<0.000
30-45	45 (38.14)	38 (50)	
45-60	41 (34.75)	26 (34.21)	
>60	32 (27.12)	9 (11.84)	
Years of clinical practice			<0.000
<= 1	12 (10.17)	7 (9.21)	
2-4	13 (11.02)	9 (11.84)	
5-10	23 (19.49)	21 (27.63)	
>10	69 (58.47)	38 (50)	
Completed lower limb reconstruction fellowship			<0.000
Yes	98 (83.05)	48 (63.16)	
No	19 (16.10)	27 (35.53)	

Plan to use the DAA for future THAs

There were 27 (22.88%) DAA non-performers who do plan to use the DAA in the future while 91 (77.12%) reported that they would not attempt it for future THAs ($p=0.001$). There were 25 (27.47%) respondents who do not plan to use DAA for future THAs who are between the age of 30-45 years, 36 (39.56%) are between the age of 45-60 years and 30 (32.97%) are older than 60 years. Of these surgeons, 3 (3.3%) have been in clinical practice for less than 1 year, 4 (4.4%) for 2-4 years, 19 (20.88%) 5-10 years, and 38 (70.33%) for more than 10 years. A vast majority, 73 (80.22%) of these respondents have not completed a lower limb reconstruction fellowship, while 17 (18.68%) are arthroplasty fellowship trained. Of the respondents who plan to use the DAA for future THAs, 20 (74.07%) are between the age of 30-45 years, 5 (18.52%) are between the age of 45-60 years and 2 (7.41%) are older than 60 years. In this group of surgeons, 18 (66.6%) have been in clinical practice for less than one year, 4 (14.81%) have been in clinical practice for 2-4 years and 5 (18.52%) have been in clinical practice for more than 10 years. An overwhelming majority of these respondents, 25 (92.59%) have completed a lower limb reconstruction fellowship, while 2 (7.41%) have not.

DISCUSSION

Worldwide, more than one million THAs are performed annually, with the reported survivorship exceeding 90% and patient satisfaction rates of more than 95% at 10 years (36,37). Many factors contribute to these impressive, albeit still imperfect outcomes including, patient age, Body Mass Index (BMI), prostheses design, bearing surface selection and subsequent wear properties (38,39). The surgical approach utilized for THA is a simple yet essential surgical choice that ultimately has a significant bearing on clinical and functional outcomes, overall survivorship and directly impacts the potential for adverse events (11,40)

Despite the global increase in THA demand, significant investigation, and continued evaluation regarding the optimal surgical approach used for THA remains ongoing. Comparisons between different approaches based on short-term clinical and functional outcomes, recovery periods, Length of Hospital Stay (LOS), and the potential that surgical approaches are able to mitigate the risk of complications including dislocation,

periprosthetic fracture, early failure and infection continues today.

The DAA to the hip compared to more traditional surgical approaches, is an anterior based, minimally invasive surgical approach that utilizes both internervous and intermuscular planes to access the hip joint. This approach potentially limits the intraoperative muscle and soft tissue damage (38,43,44). However, the opinion of South African orthopaedic surgeons regarding the optimal approach used for THA remains unknown. Therefore, to our knowledge, this is the first study evaluating South African orthopaedic surgeons who preferred surgical approach for THA and their subsequent clinical practice.

This study demonstrated that, 39.18% of South African orthopaedic surgeons performing THA have performed the DAA in their practice, while 60.82% of surgeons have never attempted this approach. This is similar to the trends seen in the USA and UK where 56% and 46% of surgeons routinely perform DAA THA (33,34). In contrast, only 8.31% of Chinese arthroplasty surgeons utilized the DAA (45). This highlights how the adoption of this minimally invasive technique for THA is variable and seems to be increasing in developed countries. The adoption of this approach may be unique to the geographic location, local practice and population demands and influence of international and local literature (25,33,34).

In the South African context, this study showed that despite representing a mature arthroplasty market, the majority of South African orthopaedic surgeons reported that they did not use the DAA preferentially for THA. The most common approaches performed by South African orthopaedic surgeons are the lateral or modified Hardinge approach (LA) and PA used by 50.53% and 33.35% of surgeons respectively. However, from those who have attempted the DAA, over a third continue to use it as their preferred approach in all THA cases.

The opinion of South African orthopaedic surgeons regarding peri-operative factors is that the DAA is associated with better short term functional outcomes, a shorter LOS, and lower volumes of intra-operative blood loss in comparison to other approaches. Almost all (90%) of DAA performers in South Africa and interestingly, 71.43% of DAA non-performers, believe it is associated with superior short-term functional outcomes compared with conventional approaches. However, surgeons with experience with the DAA and those without

believed that there was no difference in long-term functional outcomes linked to the DAA. Awad *et al.* (5) demonstrated that patients who underwent DAA THA had significantly better functional outcomes at three and six weeks according to Harris Hip Scores (HHS), however no difference was seen beyond six weeks when comparing the DAA and PA. Similarly, Meermans *et al.* (11) found that mean HHS and Western Ontario and McMaster Universities Arthritis Index (WOMAC) scores were better for the first six weeks after DAA THA, thereafter no difference was found in scores compared to the PA. Kyriakopoulos *et al.* (43) supported this belief too and reported no difference in long-term survivorship or outcomes of the DAA over the PA and LA.

In this survey, 92.59% of DAA performers and 61.22% of alternative approach surgeons believe the DAA is associated with a shorter LOS. A shorter LOS directly correlates with a significant reduction in cost to both the patient as well as to the healthcare system (46). This is of utmost importance in the South African setting as it lowers the economic burden on an already financially constrained healthcare system (47). Zhao *et al.* (17) in a comparison study looking at early functional recovery in patients who underwent primary THA using DAA with the posterolateral approach showed that patients in the DAA cohort experienced a statistically significantly shorter LOS (2.8 versus 3.5 days) ($p=0.04$). However, a meta-analysis by Meermans *et al.* (11) found no difference in LOS when comparing the DAA with the anterolateral and PA.

The DAA has been shown to be associated with lower volumes of intra-operative blood loss and a reduction in the need for allogenic blood transfusion (42,48,49). Two-thirds of DAA performers in SA believe that the DAA is associated with significantly lower volumes of blood loss ($P=0.016$). While 56.25% of surgeons who have performed the DAA but prefer an alternative approach believe intraoperative blood loss is the same. In a recent meta-analysis comparing patients who underwent THA using either the DAA or PA, Wang *et al.* (12) found that patients in the DAA cohort had significantly lower volumes of post-operative blood loss ($P=0.041$). Similarly, Sebecic *et al.* (50) found lower volumes of blood loss associated with the DAA compared to the LA (490 versus 570 mls) in patients who had a THA performed by the same surgeon.

The primary reasons for South African orthopaedic surgeons never performing the DAA included a concern around the perceived learning curve while 72.09% cited inexperience in the DAA surgical technique and almost a third of respondents believed that the DAA would elicit unsatisfactory outcomes compared to their preferred approach.

The concern of South African orthopaedic surgeons regarding the learning curve of the DAA may be borne out in the literature. Currently, research has indicated that a steep learning curve exists for surgeons performing the DAA over their first 30 cases, and thereafter a plateau is seen beyond 100 cases (23). A 2020 survey of BHS members indicated that 46.8% of respondents believe between 50 to 100 cases need to be performed for a surgeon to be competent in performing DAA THA (33). Nairn *et al.* (23) emphasized that a true learning curve exists as the mean operative time was reduced from (156.59 to 80.45 minutes) between a surgeon's first and 100th case. Complication rates also decreased from 20.8% to 7.6% once surgeons have performed more cases. Reports have noted that increased complication rates are seen during a surgeon's early experience with this new technique (33,51). Woolson *et al.* (33) found that surgeons experienced a complication rate of almost 10% during their early experiences using the DAA compared to a 2% complication rate for primary THA's performed by senior surgeons who had performed a standard PA since their residency. Spaans *et al.* (51) reported that for the first 46 patients no improvement in complication rate was seen using DAA when compared with more conventional approaches, while Kong *et al.* (25) reported complication rates as high as 44% in a surgeon's first 50 cases, which halved to 16% in the second 50 cases.

Bender *et al.* (52) discusses potential contraindications for the DAA and mention that consideration should be given to other approaches in the setting of femoral deformity, large anterior panniculus, and revision surgery. The top three responses given by DAA performers in our survey when asked under what circumstances they would not perform the DAA, and would consider using an alternative approach included, revision arthroplasty (84%), complex hip pathology (81.33%), and obesity (54.67%). Similar responses were given by members of AAHKS, who believe that the PA is a more appropriate approach for

obese patients, revision THA, and patients with complex anatomy (34). Antoniadis *et al.* (53) noted significantly higher complication and reoperation rates in obese *versus* non-obese patients. This is of concern as according to the 2019 SANHANES report, 41% of women and 11% of men in South Africa are considered to be obese (54).

Our survey found that surgeons are more likely to perform DAA THA if they are younger, have fewer years of clinical experience, and have not completed a lower limb joint reconstruction fellowship. The DAA has only gained significant popularity over the past two decades, so the fact that this “newer” technique is being adopted by younger surgeons and surgeons that have been in clinical practice for fewer years is understandable (55). Woolson *et al.* (33) found that only 16.9% of the surgeons in the United Kingdom had been exposed to the DAA either during residency or fellowship training, while 88.7% acquired training using the posterior, and 71.8% lateral approaches.

Limitations to this study include those intrinsic to questionnaire-based research which carries with it an inherent bias. This survey was limited to members of the South African Orthopaedic Association (SAOA) and so may not reflect the current opinions of the greater African orthopaedic community. The response rate to this survey was almost 25% of SAOA members meaning that a significant proportion of orthopaedic surgeons may hold differing opinions. However, not all members of the SAOA perform THA and subsequently this survey may be irrelevant to them. A number of reminders were sent, and a large sample size was attained to accurately reflect the sentiments of the South African orthopaedic community performing THA.

The authors do ultimately believe that evaluating current local practice patterns and changes over time is imperative to better align more productive educational opportunities, improve surgical support and ultimately optimise service delivery and subsequent patient clinical and functional outcomes.

CONCLUSION

The trends of the adoption of the DAA by South African orthopaedic surgeons show increasing popularity, similar to patterns seen in the UK and USA. Younger surgeons are more likely to perform the DAA THA whilst more experienced surgeons are less likely to deviate from their current standard

of practice. Increased educational support and training needs to address these fundamental changes from more traditional approaches to best maximise the benefits of THA and mitigate the risks of adverse events.

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