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Original Research Article

Comparative Outcomes of Clear Aligners and Fixed Orthodontic Appliances in Adult Saudi Patients

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Abstract: ***Background***: Adult orthodontic demand in Saudi Arabia is increasingly shaped by aesthetic visibility, professional schedules, digital expectations, and willingness to invest in comfort. Clear aligners and fixed appliances now compete for the same adult population, yet their comparative value is not explained by esthetics alone. ***Aim***: This review evaluates comparative outcomes of clear aligners and fixed orthodontic appliances in adult Saudi patients, with attention to treatment effectiveness, treatment duration, pain, oral health-related quality of life, periodontal impact, patient satisfaction, and case selection. ***Methods***: A structured narrative review was designed for evidence published between 2020 and 2025. Eligible sources included randomized trials, prospective studies, cross-sectional Saudi studies, and recent evidence syntheses that compared clear aligners with fixed appliances or examined patient-reported outcomes relevant to adult orthodontics. Findings were mapped to a Saudi clinical context by considering adult expectations, oral hygiene behaviour, access to specialist follow-up, compliance demands, and cost sensitivity. ***Results***: Current evidence suggests that aligners provide better early comfort, lower short-term interference with daily life, superior aesthetic acceptability, and easier hygiene during active treatment. Fixed appliances remain more efficient and mechanically dependable for complex movements, severe crowding, extractions, anchorage-demanding cases, and low-compliance patients. In adult Saudi practice, the most defensible conclusion is not appliance superiority but targeted selection: aligners suit motivated adults with mild to moderate malocclusion and strong cosmetic priorities, whereas fixed appliances suit complex malocclusion, uncertain compliance, and treatment plans where precise three-dimensional control is critical. ***Conclusion***: A shared decision model integrating clinical complexity and patient-centred outcomes is necessary for adult Saudi orthodontic care.

Keywords: Clear Aligners, Fixed Appliances, Adult Orthodontics, Saudi Arabia, Oral Health-Related Quality of Life, Pain, Treatment Efficiency, Patient Satisfaction.

INTRODUCTION

Adult orthodontics has changed from a specialist correction service into a lifestyle-sensitive healthcare choice. In Saudi Arabia, the adult patient often presents with several motives at once: improvement of smile appearance, professional confidence, oral function, and a desire for treatment that does not disrupt work, social events, and family responsibilities. These motives are particularly relevant because adult patients are usually

autonomous payers, compare alternatives before consultation, and expect transparent discussion of duration, discomfort, visibility, hygiene, and final occlusal quality. The comparison between clear aligners and fixed orthodontic appliances is therefore a question of clinical performance and patient experience, not merely a choice between visible and invisible devices.

Clear aligners have expanded rapidly because they combine digital planning, removable thermoplastic trays, and reduced visibility. Patients commonly associate them with convenience, easier brushing, and minimal interference with appearance. Evidence published since 2020 supports part of this perception. Reviews and clinical studies report lower early pain and better early oral health-related quality of life for aligner therapy, particularly during the first week and early months of treatment (Cardoso *et al.,* 2020; Pereira *et al*., 2020; Li *et al*., 2023). Saudi and Gulf-region studies also suggest that removable and aesthetic appliances are attractive to adults who are concerned about oral impacts, social confidence, and daily routines (Baseer *et al*., 2021; AlSeraidi *et al*., 2021). However, this favourable experience does not automatically mean that aligners produce better clinical correction in every malocclusion.

Fixed appliances remain the reference treatment for many orthodontic movements because brackets and archwires allow continuous force delivery, precise root control, and easier integration of auxiliaries. They may be less comfortable and less aesthetic, but they are not dependent on twenty to twenty-two hours of daily patient wear. For adults with complex crowding, extraction plans, significant rotations, vertical discrepancies, or anchorage requirements, fixed appliances may shorten treatment or reduce refinement cycles. Recent comparative research suggests that aligners can achieve acceptable outcomes in mild and moderate cases, but limitations persist in movement predictability and complexity management (Robertson *et al*., 2020; Inchingolo *et al*., 2023; Husain *et al.,* 2025).

The Saudi context deserves specific attention. Adult patients in Riyadh, Jeddah, Dammam, and regional cities differ in access to specialist care, affordability, commuting patterns, and appointment flexibility. Some may prefer aligners because removable appliances reduce food restrictions during social meals and religious gatherings. Others may choose fixed appliances because they offer lower dependence on self-discipline or lower laboratory cost. Baseer *et al*., (2021) showed that Saudi orthodontic patients experience oral impacts during fixed and removable appliance therapy, reinforcing the need to include patient-centred outcomes alongside traditional occlusal measures. Consequently, this review examines comparative outcomes through both scientific evidence and practical Saudi decision-making.

AIM AND OBJECTIVES OF THE REVIEW

The aim of this review is to evaluate comparative outcomes of clear aligners and fixed orthodontic appliances in adult Saudi patients and to translate current evidence into a clinically usable selection framework.

The objectives are: first, to compare clinical effectiveness in alignment, occlusal finishing, complex tooth movement, and treatment duration; second, to assess patient-reported outcomes including pain, speech effects, dietary limitations, satisfaction, and oral health-related quality of life; third, to evaluate periodontal and hygiene implications for adults who may already present with gingival inflammation or restorative history; fourth, to identify Saudi-specific factors influencing appliance choice, including aesthetic expectations, cost, adherence, appointment access, and lifestyle; and fifth, to propose a balanced referral and decision pathway that avoids overpromising aligner convenience or underestimating the value of fixed appliances.

METHODOLOGY

This review used a structured narrative methodology appropriate for a clinically focused paper rather than a pooled statistical study. The evidence base was limited to literature published from 2020 to 2025, supplemented by Saudi adult orthodontic studies and recent comparative trials or reviews. Searches were conceptualized around five linked domains: appliance type, adult orthodontic population, patient-centred outcomes, clinical efficiency, and Saudi applicability. Key terms included clear aligner, fixed appliance, Invisalign, braces, adult orthodontics, Saudi Arabia, oral health-related quality of life, OHIP-14, pain, periodontal health, treatment duration, satisfaction, and compliance.

Eligible evidence included randomized controlled trials, prospective cohort studies, cross-sectional studies, umbrella reviews, systematic reviews, and clinically relevant comparative studies. Studies were prioritised when they included adult participants, compared aligners with fixed appliances, used validated patient-reported measures, or reported clinically meaningful orthodontic outcomes. Studies focused only on children, syndromic conditions, orthognathic surgery, laboratory mechanics, or non-clinical marketing claims were not used as core evidence. Because Saudi-specific comparative trials remain

limited, international evidence was interpreted cautiously and then contextualised using Saudi patient data on removable and fixed appliance impacts (Baseer *et al.,* 2021), Saudi adult treatment barriers (Alshammari *et al*., 2022), and regional adult quality-of-life findings (AlSeraidi *et al*., 2021).

Data extraction focused on seven outcome categories: treatment effectiveness, duration, pain trajectory, oral health-related quality of life, periodontal implications, satisfaction, and implementation requirements. Treatment effectiveness was interpreted through occlusal improvement, movement predictability, need for refinements, and capacity to manage complex biomechanics. Patient-reported outcomes were interpreted through OHIP-14, visual analogue pain scales, satisfaction surveys, and domains such as eating, speaking, social interaction, and psychological discomfort. Methodological caution was applied because included studies varied in malocclusion severity, appliance brands, clinician experience, extraction status, analgesic use, and follow-up duration. The synthesis therefore presents direction and clinical meaning rather than a universal numerical superiority claim.

Table 1: Methodological framework and Saudi applicability of the review

Domain	Operational definition	Evidence used	Saudi interpretation
Population	Adults undergoing comprehensive orthodontic care.	Trials, cohorts, and Saudi cross-sectional evidence from 2020-2025.	Adult autonomy, private payment, aesthetics, work schedules, and social expectations influence treatment acceptance.
Intervention	Clear aligners delivered through digital planning, staged trays, attachments, and refinements.	Comparative aligner studies reporting pain, OHIP-14, satisfaction, and efficiency.	Best suited for motivated patients with high aesthetic demand and predictable mild to moderate movements.
Comparator	Fixed orthodontic appliances including metallic or aesthetic brackets and archwire mechanics.	Studies comparing fixed appliances with aligners or describing appliance-related impacts.	Retains advantages for complex mechanics, extraction treatment, uncertain compliance, and treatment efficiency.
Outcomes	Clinical effectiveness, duration, pain, OHRQoL, periodontal health, satisfaction, compliance, and cost.	Validated scales such as OHIP-14 and VAS, plus clinical indices and narrative outcomes.	Shared decision-making should weigh both final occlusion and everyday treatment burden.
Synthesis	Narrative integration of clinical and patient-centred evidence without statistical pooling.	Recent trials, reviews, and Saudi contextual studies.	Local application requires counselling on access, follow-up, refinement probability, and retention.

Comparative Clinical Effectiveness

Clinical effectiveness is the outcome most likely to be misunderstood in adult consultations. Clear aligners are effective for selected malocclusions, particularly mild to moderate crowding, spacing, and aesthetic alignment, but their performance depends on treatment planning, attachment design, interproximal reduction, auxiliary use, and patient compliance. The evidence since 2020 shows that aligners can deliver meaningful occlusal correction, yet movement predictability remains variable across tooth type and direction (Robertson *et al*., 2020; Vigneshkumar *et al*., 2024). Distalization and vertical movements may be possible, but they often require overcorrection, refinements, and careful staging (Inchingolo *et al*., 2023; Husain *et al*., 2025).

Fixed appliances retain advantages in complex mechanics. They are less removable, less dependent on patient wear, and more adaptable during appointments when a tooth is not responding as expected. For adults with severe rotations, premolar extraction space closure, deep bite requiring robust vertical control, skeletal camouflage, or significant midline correction, fixed appliances frequently offer more predictable root control. A 2024 comparative adult study reported that both aligners and fixed appliances corrected malocclusion, but fixed treatment was associated with shorter duration, whereas aligners produced better comfort and satisfaction (Alam *et al*., 2024). This pattern is clinically important for Saudi adults because the appliance that feels easiest during the first month may not necessarily be the appliance that completes complex correction most efficiently.

End-stage occlusion should also be considered. Aligners may produce excellent alignment but require refinements to settle occlusion

and complete torque or rotation. Oliveira *et al*., (2022) highlighted that professionals and laypeople may perceive refinement needs differently, suggesting that patient satisfaction and orthodontic finishing are not identical constructs. Fixed appliances may also require detailing, but chairside changes can be made continuously. For Saudi adult patients seeking predictable completion before marriage, employment changes, or travel, clinicians should discuss refinement probability from the start rather than presenting aligner plans as a fixed number of trays.

The best clinical position is therefore conditional. Aligners are not inferior in all adult cases, and fixed appliances are not automatically outdated. Aligner suitability increases when malocclusion is mild to moderate, oral hygiene motivation is high, aesthetic demand is strong, and the patient accepts wear responsibility. Fixed suitability increases when tooth movement is complex, compliance is uncertain, extraction mechanics are central, or the patient values speed and control over discretion.

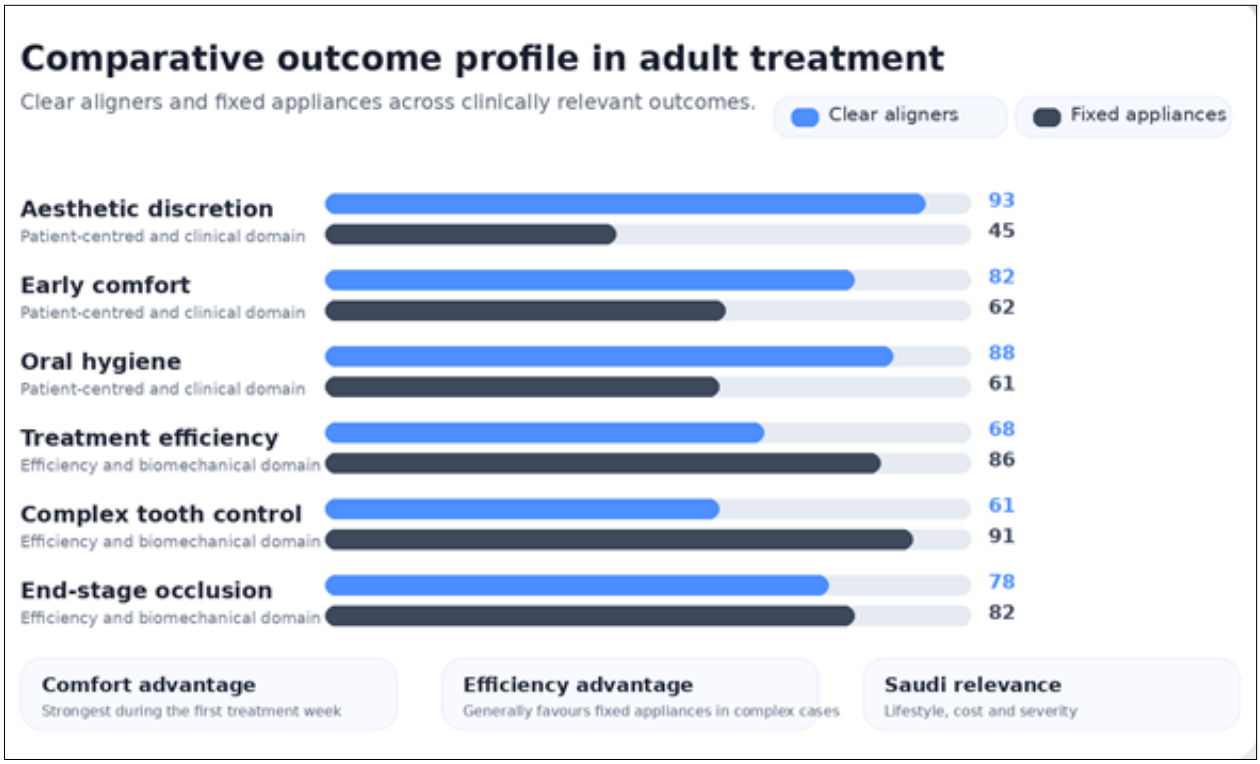

Figure 1: Comparative outcome profile for clear aligners and fixed appliances across patient-centred and biomechanical domains. Scores are interpretive synthesis values derived from comparative evidence, not pooled clinical measurements

Pain, Comfort, and Oral Health-Related Quality of Life

Pain and quality of life are central to adult Saudi appliance decisions because discomfort influences work performance, sleep, eating, speech, social confidence, and continuation of care. Recent evidence consistently shows that both aligners and fixed appliances can cause discomfort, especially after initiation or activation. The difference is timing and intensity. Reviews report that aligners tend to cause lower pain during the first few days, while differences reduce later in treatment (Cardoso *et al*., 2020; Pereira *et al*., 2020). Li *et al*., (2023) found that aligner patients had lower pain particularly on days three and four, but not at every measured point. This matters for patient counselling: aligners may reduce early pain burden but do not make orthodontic treatment painless.

Oral health-related quality of life generally favours aligners during active treatment. The most consistent advantages are psychological comfort, social confidence, eating flexibility, and less irritation from metal components. Gao *et al.,* (2021) found that aligner patients reported less pain perception, anxiety, and oral health impact during the initial treatment stage compared with fixed appliances. Alfawal *et al.,* (2022) and Jaber *et al*., (2022) reported higher early quality-of-life scores for aligner patients, although differences may narrow toward the end of treatment. AlSeraidi *et al*., (2021) similarly found higher quality-of-life scores among adult aligner patients compared with vestibular and lingual appliance groups during early treatment.

Saudi adult patients may place special value on these domains. Social meals, speaking during

work, public-facing roles, and family events can make visible brackets or ulceration especially burdensome. Removable aligners allow meals without hardware and may reduce embarrassment during social interaction. Still, aligners can affect speech, produce tray-edge irritation, cause dryness, and require disciplined cleaning. Alajmi *et al*., (2020) reported short-term oral impacts among adults treated with Invisalign and conventional fixed appliances, reminding clinicians that aligners are not impact-free.

Quality-of-life evidence should not be interpreted as a substitute for treatment effectiveness. A patient may feel better with aligners during the first six months but still need additional refinements, while another may tolerate fixed appliances and finish sooner. Therefore, patient-reported outcomes should be used as decision modifiers, not as independent proof of best appliance choice.

Periodontal Health, Hygiene, and Safety

Adult orthodontic patients often present with restorations, gingival inflammation, recession, enamel wear, or uneven oral hygiene habits. Appliance selection must therefore consider periodontal risk. Clear aligners offer an intuitive hygiene advantage because they are removable for brushing, flossing, and meals. Pango Madariaga *et al*., (2020) and later reviews suggest that aligners can support better plaque control under supervised conditions. However, high-quality reviews also warn that periodontal differences between aligners and fixed appliances may be small or clinically dependent on hygiene behaviour (Di Spirito *et al*., 2023).

Fixed appliances increase plaque-retentive surfaces around brackets, ligatures, and wires. This can elevate risk of gingival inflammation, decalcification, and staining if hygiene is poor. In the Saudi adult population, dietary sugar exposure, irregular dental visits, and variable flossing habits can make this risk clinically important. Yet fixed appliances are safe when patients receive careful hygiene instruction, professional prophylaxis, fluoride support, and regular monitoring. The device does not create periodontal disease by itself; risk emerges through plaque retention, host susceptibility, and inadequate maintenance.

Aligners also carry safety responsibilities. Wearing trays over plaque, drinking sweet beverages while trays are in place, or failing to clean aligners can create a sealed environment that favours demineralisation and odour. Aligner patients may believe removability makes treatment automatically safer, but this is only true with high compliance and cleaning discipline. A patient who removes aligners frequently for coffee, snacks, or social events may reduce tooth movement efficiency while increasing caries exposure.

Root resorption and movement control should also be discussed. Recent work on external apical root resorption suggests that comparative risk between aligners and fixed appliances is not fully resolved and should be monitored radiographically when clinically indicated (Darvizeh *et al*., 2025). The practical implication is that adult Saudi treatment should begin with periodontal screening, caries control, realistic hygiene counselling, and clear escalation rules for inflammation, poor tracking, or pain that exceeds expected adaptation.

Treatment Duration, Compliance, and Clinic Workflow

Treatment duration is a frequent adult concern. Fixed appliances may be faster in complex cases because they provide continuous force and permit chairside mechanical changes. Aligners may appear predictable on digital simulations, but the actual timeline depends on tracking, refinement cycles, attachment effectiveness, and patient wear. Alam *et al*., (2024) reported longer treatment with aligners than fixed appliances in adult orthodontic patients despite similar correction of malocclusion. Other reviews also indicate that aligner efficiency is strongest in selected cases rather than across all malocclusion types (Robertson *et al*., 2020; Owayed *et al*., 2025).

Compliance is the defining aligner variable. Adult patients may be highly motivated, but motivation fluctuates during travel, fasting schedules, long workdays, and social commitments. Aligners must usually be worn most of the day, removed only for eating, drinking non-water beverages, and oral hygiene. Noncompliance can produce tracking errors, prolonged treatment, additional refinements, and frustration. Fixed appliances transfer more responsibility to the clinician-appliance system because the device remains active continuously, although patients still need hygiene and appointment compliance.

Clinic workflow differs between appliances. Aligners require digital records, treatment-plan review, tray delivery, attachment placement, interproximal reduction, tracking checks, and refinement scans. Fixed appliances require bonding, archwire changes, emergency management of bracket breakages, and hygiene reinforcement. For Saudi adults who live far from specialist centres, aligners may reduce emergency visits but still require careful monitoring. Telemonitoring can assist, but it cannot replace clinical evaluation when tracking fails,

attachments debond, periodontal signs emerge, or occlusion is unstable.

Cost is part of workflow. Aligner laboratory fees and refinement policies can raise total cost, while fixed appliances may have lower laboratory dependence but more chairside time. Because many adult Saudi patients pay privately, clinicians should provide written estimates that include expected refinements, retainers, emergency visits, and post-treatment retention. Ethical care requires explaining that the lower-visibility option may not be the lower-cost or faster option.

Saudi Patient-Centred Interpretation

Adult Saudi orthodontic care should not import international conclusions without local interpretation. Saudi adults may seek treatment for social confidence, professional appearance, marriage readiness, or correction of long-standing functional problems. Alshammari *et al*., (2022) reported that adult perceptions and barriers to orthodontic treatment are shaped by subjective need, socioeconomic factors, and perceived obstacles. These findings support a consultation model that treats appliance selection as shared planning rather than a sales choice.

For highly aesthetic adult patients with mild to moderate malocclusion, good periodontal health, and dependable routines, aligners may offer a superior experience. They reduce visibility, allow normal meals, and often improve early quality-of-life scores. This can improve acceptance among adults who would otherwise avoid orthodontics. In Saudi cities where professional image and social presentation are important, aligners may increase access by lowering psychological resistance.

For complex cases, fixed appliances should be explained positively rather than as a second-best option. Some patients may initially request aligners because of appearance, but their clinical condition may require movements better controlled with fixed appliances. In such cases, ceramic brackets, lingual options, or staged hybrid treatment can address aesthetic concerns while preserving mechanical control. The clinician's role is to protect the patient from an attractive but inefficient plan.

The most appropriate Saudi pathway is stratified. First, classify malocclusion complexity and periodontal readiness. Second, identify the patient's strongest preference: discretion, speed, comfort, cost, or control. Third, test the reality of compliance. Fourth, discuss risks and refinement probability. Fifth, document shared decisions and outcome measures. This approach helps prevent dissatisfaction because patients understand why a particular appliance was recommended.

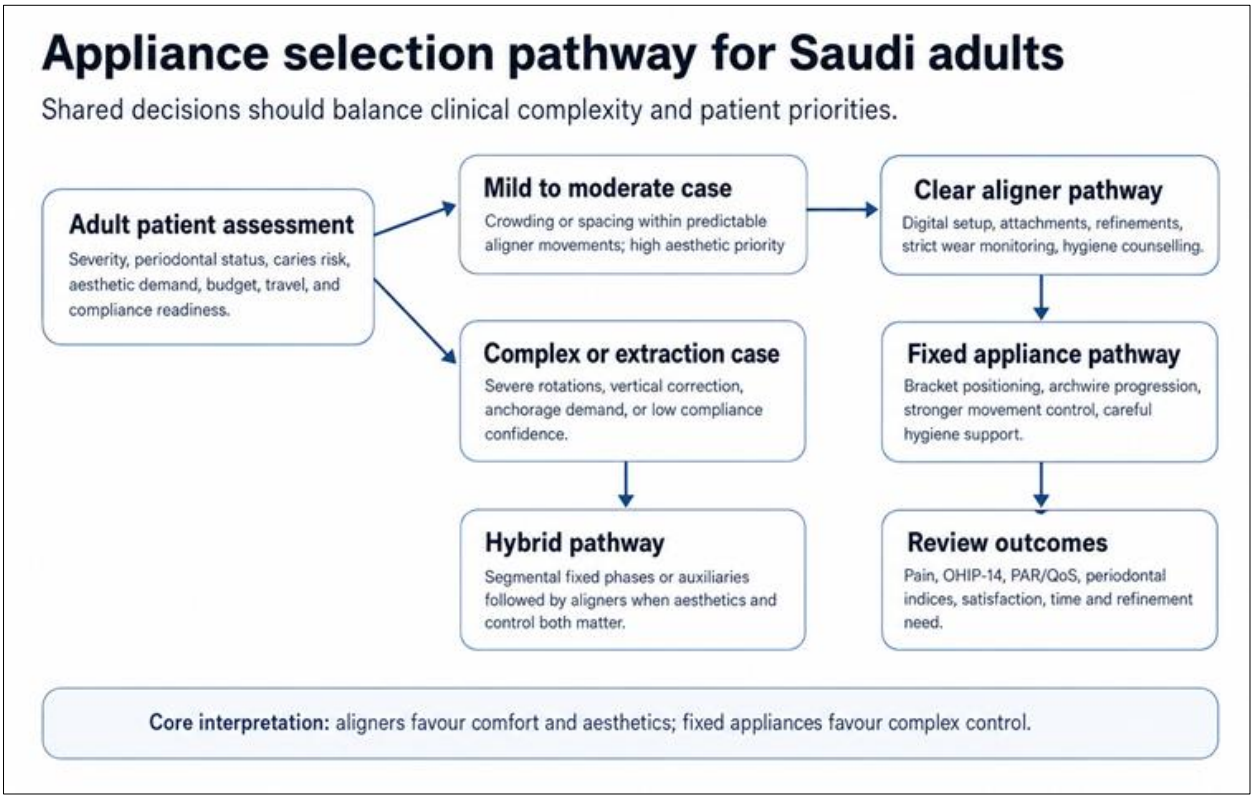

Figure 2: Evidence-informed appliance selection pathway for adult Saudi orthodontic patients, integrating clinical complexity, aesthetic demand, periodontal readiness, compliance, and outcome review

Clinical Recommendations

For adult Saudi patients with mild to moderate crowding, spacing, relapse, or aesthetic alignment needs, clear aligners can be recommended when oral hygiene is stable, periodontal risk is low, and the patient can commit to consistent wear. For patients with severe rotations, extraction treatment, vertical correction, deep bite with skeletal contribution, significant root movement, or uncertain adherence, fixed appliances should usually remain the primary recommendation. Hybrid treatment should be considered when an adult wants discretion but requires limited fixed mechanics for difficult movements.

Clinicians should measure outcomes using both technical and patient-centred tools. Technical measures may include Peer Assessment Rating, objective grading scores, overjet, overbite, arch coordination, midline correction, and root parallelism. Patient-centred measures should include pain scales, OHIP-14, satisfaction, speech impact, diet restriction, and perceived confidence. Such combined measurement reflects the reality that adult treatment success is judged by both occlusion and daily life.

Consent should be specific. Aligner consent must include wear-time expectations, refinement probability, attachment visibility, possible speech changes, tray care, and risk of poor tracking. Fixed-appliance consent must include visibility, ulceration, dietary limits, decalcification risk, emergency visits, and hygiene demands. Retention should be emphasized for both groups because relapse can undermine outcomes regardless of appliance type.

Dental teams should avoid presenting aligners as modern and fixed appliances as old. Both are modern when used correctly. The professional standard is to select the lowest-risk method that can achieve the agreed treatment goals within the patient's values and biological limits.

Table 2: Comparative outcome interpretation for adult Saudi patients

Outcome domain	Clear aligners	Fixed appliances	Likely advantage	Clinical comment
Early pain and comfort	Usually lower pain in early days; removable and smooth.	More soft-tissue irritation and activation discomfort.	Aligners	Advantage is strongest early and should not be described as pain-free.
Aesthetic acceptability	High discretion; attractive for adults in public-facing roles.	Metal brackets visible; ceramic options reduce but do not remove visibility.	Aligners	Aesthetic benefit may increase treatment acceptance.
Complex movements	May require attachments, auxiliaries, overcorrection, and refinements.	Continuous force and better chairside control for difficult mechanics.	Fixed appliances	Particularly important for severe rotations, extractions, and vertical control.
Treatment duration	Efficient in selected cases but prolonged by poor tracking or refinements.	Often faster in complex correction and less dependent on wear time.	Context-dependent	Adult patients should receive realistic timeline ranges.
Hygiene and periodontal care	Removable for brushing and flossing; tray hygiene essential.	Plaque retention around brackets requires intensive prevention.	Aligners, if compliant	Both are safe with good maintenance and risky with poor hygiene.
Saudi implementation	Useful when aesthetics, travel flexibility, and motivation are high.	Useful when affordability, complexity, and low compliance risk dominate.	Shared decision	Clinical suitability should override marketing preference.

Limitations and Future Research

The main limitation of the current evidence is heterogeneity. Studies differ in age, malocclusion severity, extraction status, aligner brand, clinician experience, pain assessment timing, and outcome definitions. Many studies are small, short-term, or vulnerable to confounding because patients who choose aligners may differ from those who choose fixed appliances. Saudi-specific evidence remains limited, and more prospective studies are needed in adult Saudi populations.

Future Saudi research should compare aligners and fixed appliances using standardized baseline complexity, matched age and sex groups, periodontal screening, socioeconomic variables, and

validated Arabic patient-reported measures. Studies should report treatment duration, number of refinements, missed appointments, emergency visits, total cost, retention outcomes, and long-term satisfaction. Qualitative research would also help explain why adults accept, reject, or discontinue different appliances. Such work would support evidence-based counselling in Saudi specialist clinics and university hospitals.

Evidence Interpretation and Clinical Translation

A further issue concerns the difference between statistical significance and clinical meaning. Some pooled results show measurable advantages for aligners in early OHIP-14 or VAS scores, yet adult patients usually experience these differences as part of a broader treatment story involving communication, confidence, cost, and trust. A small reduction in pain may be decisive for a patient who lectures, leads meetings, or travels frequently, while another patient may accept more discomfort if fixed appliances reduce uncertainty in a difficult extraction plan. Saudi clinicians should therefore translate evidence into patient-specific consequences rather than reciting averages. The most responsible phrasing is that aligners often improve the early treatment experience, whereas fixed appliances often increase mechanical control when the malocclusion is demanding.

The quality of evidence also requires careful explanation. Recent trials and reviews provide useful guidance, but many comparisons include different appliance systems, clinician skill levels, treatment goals, and malocclusion severities. Adults who are allocated to aligners may have milder cases, stronger aesthetic motivation, or better baseline hygiene. Adults who receive fixed appliances may include more complex treatment plans. Without careful matching, observed superiority can reflect case selection rather than appliance biology. This limitation is particularly important in Saudi private practice, where patient preference and affordability frequently influence appliance assignment before research variables are measured. A review paper aimed at clinical standards should therefore emphasise selection bias, not conceal it.

Saudi adult patients also require culturally competent counselling. Treatment may intersect with professional roles, family occasions, travel to other cities, Ramadan routines, and expectations for rapid visible improvement. Aligners can fit well with social eating because they are removed before meals, but this advantage becomes a disadvantage if removal periods become long or frequent. Fixed appliances remove the temptation to leave the appliance out, but they impose dietary restrictions and may create ulceration during the early adjustment phase. In both situations, success depends on how honestly the clinician describes the daily routine. Written instructions, appointment reminders, and photographic monitoring can improve adherence, but they should be presented as support tools rather than guarantees.

Aesthetic preference should be respected but not allowed to override risk. Some adults request aligners because the appliance is discreet, yet their records may show rotations, vertical discrepancies, periodontal compromise, or extraction requirements that make aligner-only treatment less efficient. A careful clinician can still protect aesthetic priorities through ceramic fixed appliances, limited lingual segments, staged hybrid mechanics, or a short fixed phase followed by aligners. Conversely, some adults request fixed appliances because they believe braces are stronger, but their malocclusion and lifestyle may make aligners suitable and more acceptable. Balanced counselling should therefore avoid device loyalty. The practitioner is selecting a force-delivery strategy, not defending a brand or tradition.

Retention is another outcome that must be integrated into comparative discussions. Adult patients often judge success at debonding or final tray delivery, but stability depends on retainers, occlusal settling, periodontal support, and long-term behaviour. Aligners and fixed appliances both require retention, and neither prevents relapse when retainers are neglected. Saudi clinics should include retention cost, retainer replacement, and follow-up responsibilities in the original treatment agreement. This prevents the common misunderstanding that the active appliance alone determines lifelong alignment.

A final translational point is that patient satisfaction should be measured at more than one time point. Early satisfaction may favour aligners because they are less visible and often more comfortable. Mid-treatment satisfaction may depend on tracking, speech adaptation, and perceived progress. End-treatment satisfaction depends on occlusion, smile aesthetics, treatment duration, cost, and the number of refinements or repairs. A Saudi review framework should therefore recommend longitudinal assessment using brief, validated tools. A clinic that records pain at initiation, OHIP-14 during early treatment, hygiene indices at each visit, and satisfaction at completion will understand its own outcomes better than a clinic relying on anecdotal impressions.

This interpretation also recognises that adult satisfaction is negotiated over time. The first month often determines emotional acceptance, while the final months determine whether the patient believes

the investment was justified. A Saudi clinician should therefore revisit expectations repeatedly, not only at consent. At each review, the patient should understand whether discomfort is normal, whether tracking is adequate, whether hygiene is safe, and whether the planned finish remains realistic. This continuous explanation reduces anxiety, strengthens adherence, and makes appliance choice a transparent clinical partnership.

Clinical Governance Perspective

Clinical governance also matters in comparative appliance selection. A Saudi orthodontic service that wishes to meet high publication and audit standards should define case complexity before treatment, record why the chosen appliance was selected, and document deviations from the original plan. For aligner patients, deviations may include missed wear time, tracking loss, attachment failure, delayed refinement, or unplanned switch to auxiliaries. For fixed-appliance patients, deviations may include bracket breakage, decalcification risk, emergency visits, soft-tissue trauma, or prolonged detailing. Recording these events turns routine care into an evaluable pathway and helps clinics identify whether dissatisfaction is caused by appliance limitations, communication gaps, biological response, or unrealistic expectations.

This governance approach is especially useful where adult patients attend private clinics and compare outcomes through informal social networks. A patient may describe aligners as successful because they were discreet, while another may describe braces as successful because treatment ended earlier. Both views can be valid if they match the original priorities. The clinician should therefore define success before treatment begins. Success may mean finishing within a target time, avoiding visible brackets, reducing pain burden, protecting periodontal health, minimising cost, or achieving a demanding occlusal correction. Once success is defined, appliance comparison becomes measurable and ethically clear.

Future Saudi guidelines could classify adults into low, moderate, and high complexity groups, then recommend aligner, fixed, or hybrid pathways according to biological risk and preference strength. Such guidance would not restrict clinician judgement; it would standardise the minimum explanation owed to patients. It would also encourage transparent referral when a requested aligner plan is beyond the provider's experience. In adult orthodontics, professionalism is shown not by offering every appliance to every patient, but by matching treatment ambition with technical competence, follow-up capacity, and patient behaviour. Practical reporting should also separate device failure from process failure. An aligner plan may fail because the movement was unrealistic, because wear time was poor, or because the patient was not reviewed early enough. A fixed-appliance plan may fail because mechanics were inappropriate, because oral hygiene deteriorated, or because repeated breakages interrupted progress. Distinguishing these causes protects fairness in research and improves clinical learning. It also gives Saudi patients a clearer explanation if treatment changes are required. When records contain baseline complexity, stated preference, consented risks, review findings, and final outcomes, future comparisons become more trustworthy and more useful for daily practice. Such transparent documentation supports peer review, quality assurance, audit cycles, team training, patient confidence, and responsible adoption of new orthodontic technologies without weakening clinical judgement or biological caution overall.

CONCLUSION

Clear aligners and fixed orthodontic appliances both have legitimate roles in adult Saudi orthodontics. Aligners generally offer stronger early comfort, better aesthetics, easier hygiene, and higher short-term quality-of-life scores, making them attractive for motivated adults with mild to moderate malocclusion. Fixed appliances remain more dependable for complex movements, lower-compliance patients, and cases where treatment efficiency and biomechanical control outweigh visibility concerns. The evidence from 2020 to 2025 supports a nuanced conclusion: the best appliance is not the most fashionable or the most traditional, but the one that matches malocclusion severity, periodontal risk, lifestyle, compliance, and patient priorities. For Saudi adult care, an outcome-based shared decision pathway is the most ethical and clinically reliable model.

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