Awareness of interdisciplinary approach of PRF (platelet rich fibrin) in dentistry.

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Abstract:

Platelet-Rich Fibrin (PRF), a second-generation autologous platelet concentrate, has gained significant traction in regenerative dentistry due to its biocompatibility and sustained release of growth factors. Originally utilized in oral surgery, its interdisciplinary potential now spans periodontics, endodontics, orthodontics, pediatric dentistry, prosthodontics, and implantology. This study evaluates the awareness, perception, and clinical understanding of PRF among dental students, interns, and practitioners. A cross-sectional survey comprising 101 participants revealed that although the majority had less than two years of clinical experience, they exhibited a good foundational understanding of PRF's preparation, biological functions, and interdisciplinary applications. Key findings highlight awareness of PRF's use in enhancing osseointegration, tissue healing, and pediatric revascularization procedures. However, gaps remain in its standardized application and in-depth knowledge across specialties. The results underscore the need to integrate PRF education into dental curricula and promote collaboration across disciplines to optimize patient outcomes and leverage PRF’s full therapeutic potential.

Keywords:

Platelet-Rich Fibrin (PRF),Interdisciplinary dentistry,Regenerative dentistry,Dental biomaterials,PRF awareness,Dental education,Periodontics,Endodontics,Implantology,Pediatric dentistry,PRF survey,Autologous platelet concentrates

Introduction :

Platelet-Rich Fibrin (PRF), a second-generation platelet concentrate, has emerged as a valuable tool in regenerative therapies owing to its autologous origin, biocompatibility, and sustained release of growth factors[1]. Originally introduced in the field of oral and maxillofacial surgery, PRF has found applications in diverse medical and dental domains, including periodontics[2], implantology[3], endodontics[4], and orthodontics[4]. This wide applicability underscores the importance of an interdisciplinary approach for maximizing the therapeutic potential of PRF[5].

The use of PRF fosters collaboration between clinicians from different specialties, enabling comprehensive patient care that leverages the strengths of regenerative medicine and biomaterials science[6]. Its role in enhancing soft and hard tissue healing, reducing postoperative complications, and supporting implant integration exemplifies the synergy possible when disciplines work together[7]. Despite these advantages, variability in protocols, lack of standardization, and limited awareness among professionals from various fields hinder optimal utilization of PRF[8].

This article aims to raise awareness about the interdisciplinary applications of PRF, highlight key clinical benefits supported by current literature, and encourage integration of PRF-related knowledge into medical and dental curricula as well as continuing education programs.

Thus this survey aims to evaluate the level of knowledge, perception, and awareness regarding the interdisciplinary use of Platelet-Rich Fibrin (PRF) in dentistry, including its applications in periodontics, endodontics, oral surgery, orthodontics, pediatric dentistry, and prosthodontics, among dental students, interns, and practitioners.To analyze the correlation between clinical experience and correct responses related to PRF’s interdisciplinary use.

Materials and Methods

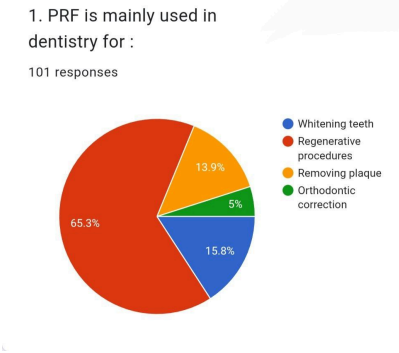
A cross-sectional survey was conducted to evaluate the awareness and perceptions of the interdisciplinary applications of Platelet-Rich Fibrin (PRF) among dental professionals . This survey is created by questionnaire preparation and circulated via

google form .The study was carried out over a period of one month and received 101 response.Statistical analysis was performed using SPSS (version 30.0.0),with significance set at $p < 0.05$.

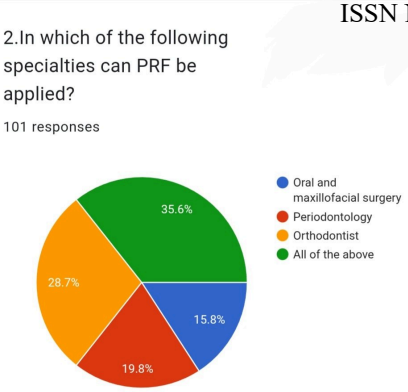
Results

The survey revealed that approximately 70% of participants had less than two years of clinical experience, yet most demonstrated a good understanding of PRF, correctly identifying its primary use in regenerative dental procedures and its preparation by centrifuging blood without anticoagulants. Over a third recognized its interdisciplinary relevance across all dental specialties, including periodontics, endodontics, oral surgery, and orthodontics. A significant portion of respondents understood its biological benefits—such as enhancing osseointegration, forming a natural fibrin clot, supporting pulp and periapical tissue regeneration, and aiding revascularization in pediatric cases.

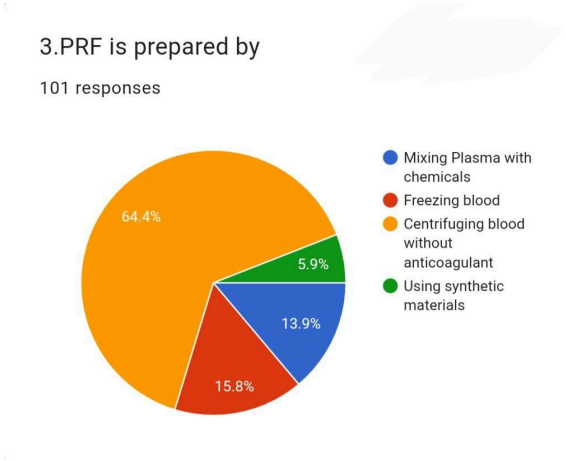
Around 59% identified the fibrin matrix as PRF's regenerative scaffold, and 64% acknowledged its pediatric applications. Most were aware that PRF releases growth factors over 7–14 days and that its autologous nature minimizes immune reactions. Knowledge of its roles in bone regeneration, soft tissue conditioning in prosthodontics, sinus lift procedures, and alveolar ridge preservation was also high. Additionally, many correctly identified A-PRF as a product of lower-speed centrifugation and highlighted collaborative use between orthodontists and surgeons. Nearly 69% recognized the core features—autologous origin, biocompatibility, and sustained growth factor release—that make PRF valuable across disciplines



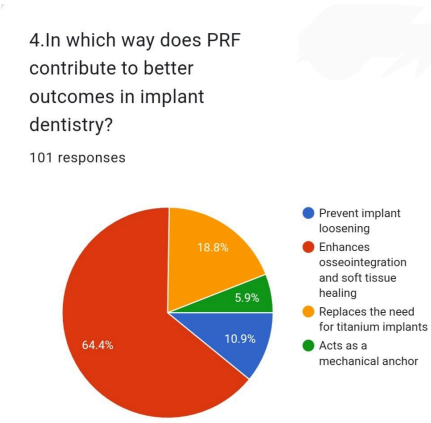
65.3% (Majority) selected “Regenerative procedures”, correctly identifying the primary role of PRF.15.8% chose “Whitening teeth”, which is incorrect. 13.9% selected “Removing plaque”, which is also inaccurate. 5% chose “Orthodontic correction”which is incorrect.



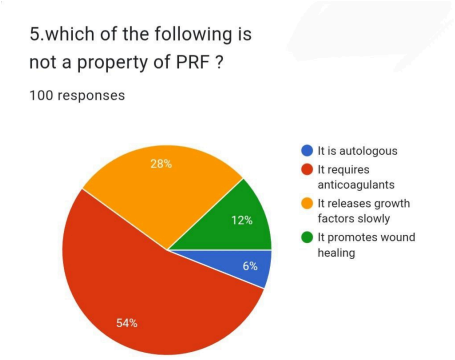
35.6% of respondents correctly chose “All of the above,” showing awareness of PRF’s versatility across various dental specialties. However, 28.7% selected “Orthodontist,” 19.8% accurately identified “Periodontology”,15.8% selected oral and maxilla facial surgery .



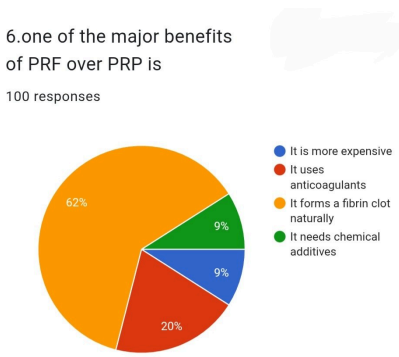
64.4% of respondents correctly identified “Centrifuging blood without anticoagulant” as the proper method for preparing PRF,15.8% mistakenly selected “Freezing blood,” 13.9% chose “Mixing plasma with chemicals” 5.9% incorrectly believed PRF involves “Using synthetic materials,” despite it being fully autologous.



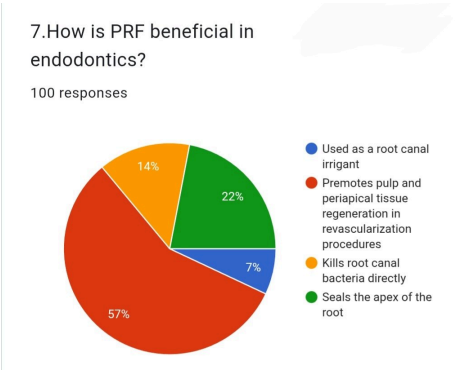
64.4% correctly identified “Enhances osseointegration and soft tissue healing” as the primary contribution of PRF.18.8% mistakenly believed PRF “Replaces the need for titanium implants”, which is inaccurate.10.9% selected “Prevent implant loosening”,5.9% selected “Acts as a mechanical anchor ”



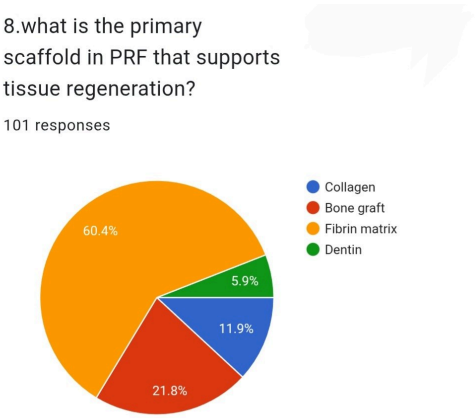
54% correctly answered “It requires anticoagulants”, identifying the only incorrect statement about PRF. 28% chose “It releases growth factors slowly”, 12% selected “It promotes wound healing”, which is also correct and a major benefit of PRF in regenerative therapy.



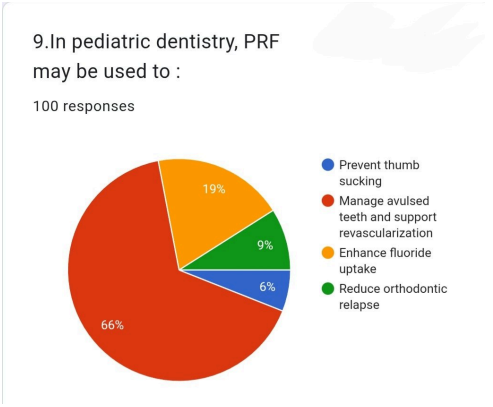
62% correctly chose “It forms a fibrin clot naturally”, identifying the primary advantage of PRF over PRP (Platelet-Rich Plasma).20% incorrectly selected “It uses anticoagulants”, 9% believed “It is more expensive”, 9% also selected “It needs chemical additives”.



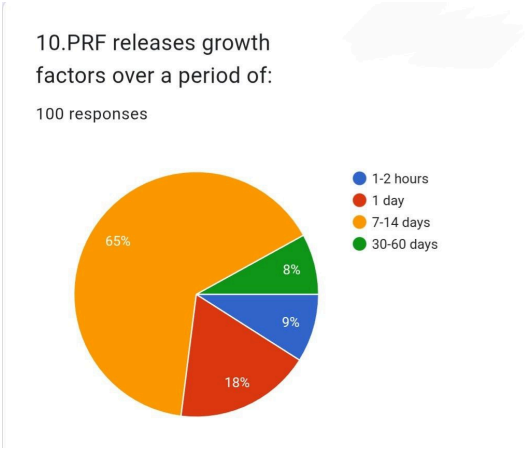
57% correctly selected:“Promotes pulp and periapical tissue regeneration in revascularization procedures”, identifying the primary benefit of PRF in endodontics.22% chose:“Seals the apex of the root”, 14% incorrectly believed PRF “Kills root canal bacteria directly” ,7% selected “Used as a root canal irrigant”.



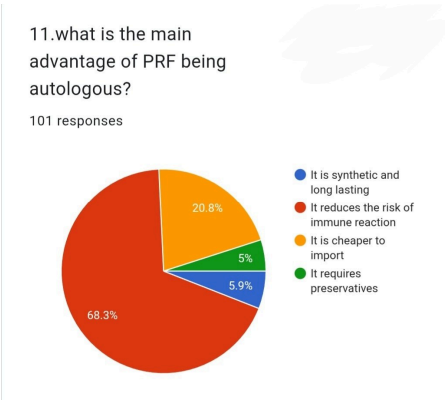
60.4% correctly selected “Fibrin matrix”, which is the main structural component of Platelet-Rich Fibrin (PRF) ,21.8% chose “Bone graft”, which is incorrect. 11.9% selected “Collagen”,5.9% mistakenly chose “Dentin”, which is unrelated to PRF’s matrix.



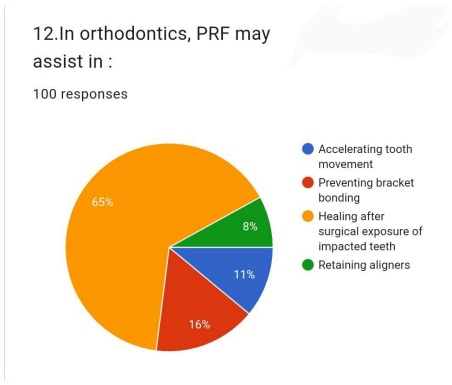
66% of respondents correctly selected “Manage avulsed teeth and support revascularization”, which reflects the most clinically accurate use of PRF in pediatric dentistry.19% chose “Enhance fluoride uptake”, which is incorrect ,9% selected “Reduce orthodontic relapse”,6% chose “Prevent thumb sucking”.



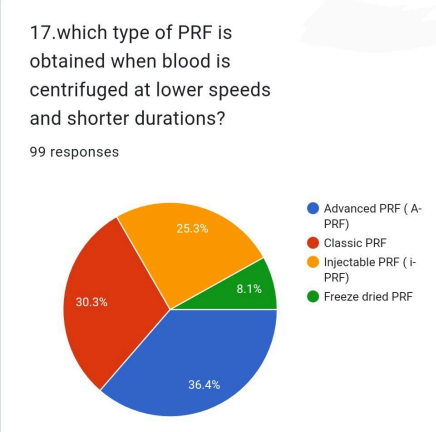
7–14 days (Orange) — 65% of respondents;1 day (Red) — 18% of respondents; 1–2 hours (Blue) — 9% of respondents; 30–60 days (Green) — 8% of respondents.



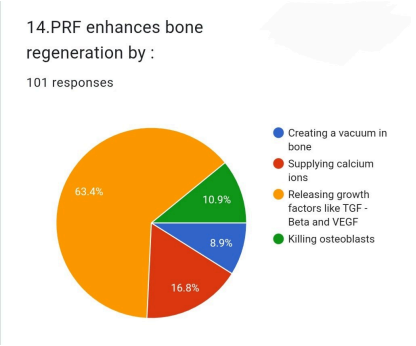
"It reduces the risk of immune reaction" (Red) – 68.3%."It is cheaper to import" (Orange) – 20.8%"It is synthetic and long-lasting" (Blue) – 5.9%PRF is not synthetic; it’s a natural product derived from the patient’s own blood.“It requires preservatives" (Green) – 5% .



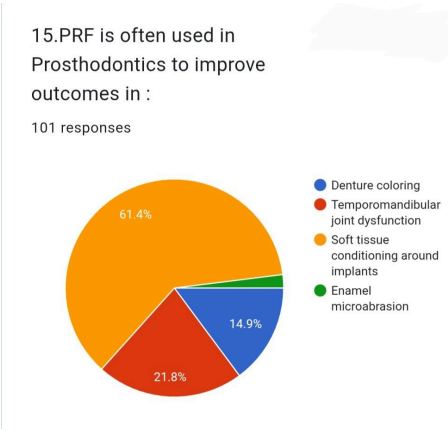
Healing after surgical exposure of impacted teeth (Orange – 65%);Preventing bracket bonding (Red – 16%).Accelerating tooth movement (Blue – 11%):Retaining aligners (Green – 8%).



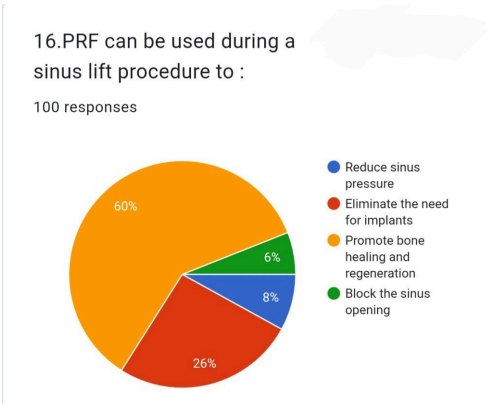
Dense fibrin clot (Red – 34%):This is the correct.Spray (Green – 30%):This is incorrect. PRF is not used in spray form.Powder form (Orange – 22%):Also incorrect. PRF is not prepared or used in powder form.Liquid gel (Blue – 14%)



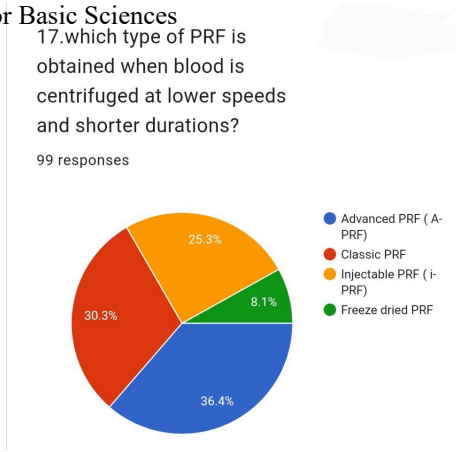
63.4% (Orange slice): The largest portion of respondents believe that PRF enhances bone regeneration by creating a vacuum in bone. 16.8% (Red slice),10.9% (Green slice),8.9% (Blue slice): The least common response is that PRF enhances bone regeneration by killing osteoblasts.



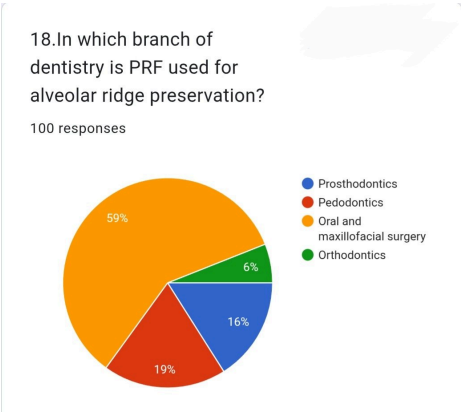
Soft tissue conditioning around implants (orange): 61.4% of the respondents choosing this option.Temporomandibular joint dysfunction (red): This use received 21.8% of the responses.Denture coloring (blue): This use was selected by 14.9% of respondents.Enamel microabrasion (green): small percentage of 2.0% of the responses



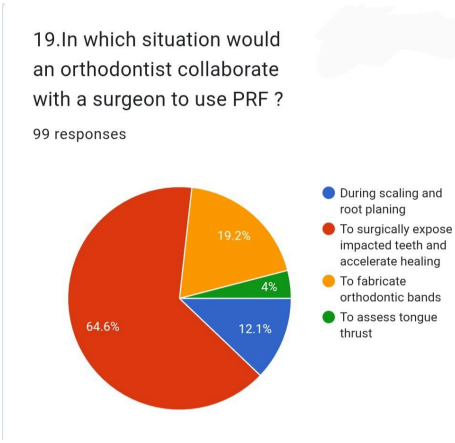
60% of respondents believe PRF can be used to promote bone healing and regeneration .26% feel it can be used to eliminate the need for implants .8% think PRF is useful to block the sinus opening .6% of respondents believe PRF can help to reduce sinus pressure.



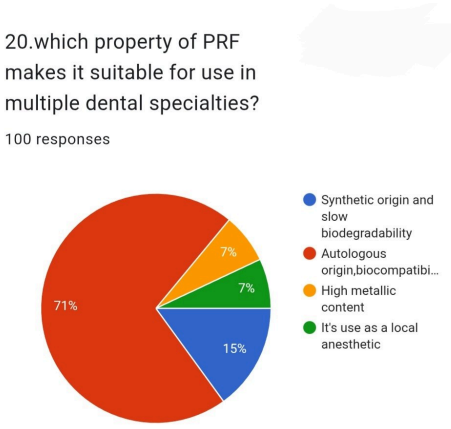
Advanced PRF (A-PRF): Represented by the blue section, which accounts for 36.4% of the responses..Classic PRF: Represented by the red section, which accounts for 30.3% of the responses.Injectable PRF (i-PRF): Represented by the orange section, with 25.3% of the responses. 8.1% of the responses of Freeze-dried PRF.



Prosthodontics received 59% of the responses.Pedodontics received 19% of the responses.Oral and maxillofacial surgery received 16% of the responses.Orthodontics received 6% of the responses.



To surgically expose impacted teeth and accelerate healing (64.6% of respondents) , During scaling and root planning (19.2% of respondents),To fabricate orthodontic bands (12.1% of respondents) .To assess tongue thrust (4% of respondents).



71% of the respondents chose "Autologous origin, biocompatibility," ,15% chose "Its use as a local anesthetic,".7% each selected the options "Synthetic origin and slow biodegradability," "High metallic content,"

Discussion

Platelet-Rich Fibrin (PRF) has emerged as a valuable biomaterial in various dental treatments due to its autologous (self-derived) nature and its ability to release growth factors[1]. Initially used in oral and maxillofacial surgery[3], PRF has found applications across several fields in dentistry, such as periodontics[2], implantology[3], endodontics[4], orthodontics[4], pediatric dentistry[6], and prosthodontics[6]. The document emphasizes the importance of an interdisciplinary approach, where collaboration between various specialists can maximize the potential of PRF[5]. PRF's ability to foster collaboration between different clinicians—oral surgeons, periodontists, endodontists, orthodontists, and pediatric dentists—allows for comprehensive patient care[6]. PRF can be used to enhance tissue healing, promote implant integration, and improve soft and hard tissue regeneration[7]. This survey points out that such collaborations are key to improving patient outcomes, particularly when utilizing advanced regenerative techniques[9].

PRF is celebrated for its ability to accelerate healing, reduce postoperative complications, and enhance the integration of implants[7]. The sustained release of growth factors from PRF over a period of 7–14 days supports various regenerative processes, making it highly beneficial in procedures such as bone grafting, sinus lift, ridge preservation, and periodontal regeneration[7]. One of the key findings of the survey mentioned in the article is that most participants, even with limited clinical experience, demonstrated good knowledge of PRF's benefits[10]. They were able to correctly identify its primary use in regenerative procedures and its preparation method (centrifuging blood without anticoagulants)[11].

Despite its promising applications, PRF faces several limitations. A significant concern is limited evidence supporting its use in certain dental specialties such as orthodontics and prosthodontics[46], where its effectiveness remains under-researched and lacks standardized protocols. Additionally, variability in preparation methods—including differences in centrifugation speed, time, and equipment—can lead to inconsistencies in PRF[11]. Close-ended questions may not capture the full understanding or attitude of participants toward interdisciplinary PRF usage[8].

Choukroun's research introduces the broad clinical applications of PRF in dental implantology[3]. They underscore its role in promoting better integration of implants and reducing complications like inflammation, improving long-term outcomes. Future research could establish protocols for long-term implant maintenance using PRF and may use customized PRF formulations based on the patient’s healing needs[12].

Conclusion:

The article effectively underscores the critical role of PRF in modern dentistry, particularly in regenerative therapies. It emphasizes that interdisciplinary collaboration between dental professionals can significantly enhance the therapeutic outcomes of PRF. However, to optimize its clinical potential, it is essential to standardize PRF protocols, increase educational awareness, and address misconceptions in the field. By improving the understanding of PRF and encouraging its integration into clinical practices, PRF can continue to serve as a powerful tool in the regeneration of dental tissues and the successful implementation of implantology.

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